

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

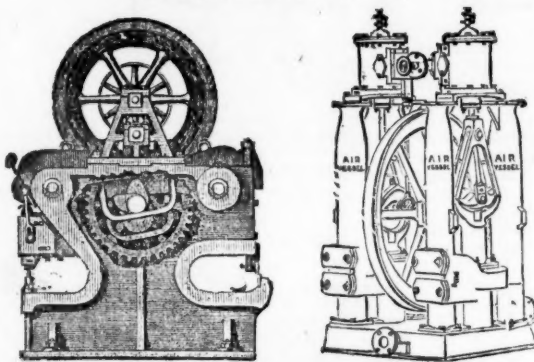
[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2280.—VOL. XLIX.

LONDON, SATURDAY, MAY 3, 1879.

PRICE (WITH THE JOURNAL) SIXPENCE.
PER ANNUM, BY POST, £1 4s.

JOHN CAMERON'S
SPECIALITIES ARE ALL SIZES OF
**Steam Pumps, Shipbuilders' Tools,
BAR SHEARS.**
ESTABLISHED 1852.



**OLDFIELD ROAD IRON WORKS,
SALFORD, MANCHESTER.**

For Excellence
and Practical Success
of Engines



Represented by
Model exhibited by
this Firm.

HARVEY AND CO.
ENGINEERS AND GENERAL MERCHANTS,
HAYLE, CORNWALL.
LONDON OFFICE,—186, GRESHAM HOUSE, E.C.
MANUFACTURERS OF
PUMPING and other LAND ENGINES and MARINE STEAM ENGINES
of the largest and most approved kinds in use. SUGAR MACHINERY,
MILLWORK, MINING MACHINERY, AND MACHINERY IN GE-
NERAL. SHIPBUILDERS IN WOOD AND IRON.

HUSBAND'S PATENT PNEUMATIC STAMPS.

SECONDHAND MINING MACHINERY FOR SALE.
IN GOOD CONDITION, AT MODERATE PRICES—viz.,
PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES;
STEAM CAPSTANS; ORE CRUSHERS; BOILERS and PITWORK of
various sizes and descriptions; and all kinds of MATERIALS required for
MINING PURPOSES.

THE
PHOSPHOR BRONZE
COMPANY (LIMITED).
139, CANNON STREET, E.C
LONDON.

Alloy, No. II., for pinions, ornamental castings, steam
fittings, &c. 110s. per cwt.
" No. IV., for pinions, pumps, valves, linings,
cylinders, &c. 110s. "
" No. VI. (must be cast in chill) for bolts, &c.
This alloy has very great tensile strength 125s. "
" No. VII., for hydraulic pumps, valves, and
plungers, piston rings, bushes and bearings,
for steel shafts 125s. "
" No. XI., special phosphor-bronze bearing metal,
wearing five times as long as gun metal 105s. "

The prices of castings vary according to the pattern, the quantity required, and
the alloy used.

WIRE ROPES, TUBES OF ALL DESCRIPTIONS, &c.

ASBESTOS

A NEW and INDESTRUCTIBLE ASBESTOS PACKING for
steam joints and glands, possesses an unusual power of resisting
heat, works efficiently under the highest pressure of steam, being
practically indestructible. Apply to—

THE PATENT ASBESTOS MANUFACTURE CO. (LIMITED),
31, ST. VINCENT PLACE, GLASGOW,
AND 10, MARSDEN STREET, MANCHESTER.

BENNETTS' SAFETY FUSE WORKS
ROSKEAR, CAMBORNE, CORNWALL.

BLASTING FUSE FOR MINING AND ENGINEERING
PURPOSES.

Suitable for wet or dry ground, and effective in tropical or Polar climates.

W. BENNETTS, having had many years experience as chief engineer with
Messrs. Bickford, Smith, and Co., is now enabled to offer Fuse of every variety of
his own manufacture, of best quality, and at moderate prices.
Price Lists and Sample Cards may be had on application at the above address.
LONDON OFFICE,—H. HUGHES, Esq., 45, GRACECHURCH STREET.

PARIS, 1867. ORDER OF THE CROWN OF PRUSSIA. FALMOUTH, 1867.
BRONZE MEDAL, 1867. SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecu-
tive weeks, ending February 7, was 24'90, 27'60, 24'80, 26'10,
28'30, 27'10, 28'40, 28'70 metres. Total advance of south head-
ing during January was 121'30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tun-
nel, the McKean Rock Drill continued to work until the pres-
sure was reduced to one-half atmosphere (7½ lbs.), showing
almost the entire motive force to be available for the blow
against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these
Machines for the SEVERN TUNNEL; the LONDON AND
NORTH-WESTERN RAILWAY for the FESTINIOG TUN-
NEL; and the BRITISH GOVERNMENT for several Public
Works. A considerable number of Mining Companies are now
using them. Shafts and Galleries are driven at from three to
six times the speed of hand labour, according to the size and
number of machines employed, and with important saving in
cost. The ratio of advantage over hand labour is greatest
where the rock is hardest.

These Machines possess many advantages, which give them
a value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL
USE THROUGHOUT THE WORLD FOR MINING, TUN-
NELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the
most portable—the most durable—the most compact—of the
best mechanical device. They contain the fewest parts—have
no weak parts—act without SHOCK upon any of the operat-
ing parts—work with a lower pressure than any other Rock
Drill—may be worked at a higher pressure than any other
—may be run with safety to FIFTEEN HUNDRED STROKES
PER MINUTE—do not require a mechanic to work them—are
the smallest, shortest, and lightest of all machines—will give
the longest feed without change of tool—work with long or
short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or
open work. Their working parts are best protected against
grit and accidents. The various methods of mounting them
are the most efficient.

N.B.—Correspondents should state particulars as to
character of work in hand in writing us for information,
on receipt of which a special definite answer, with
reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL,
IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

McKEAN AND CO.

ENGINEERS.

OFFICES,

5, RUE SCRIBE, PARIS

MANUFACTURED FOR McKEAN AND CO. BY
MESSRS. P. AND W. MACLELLAN, "CLUTHA IRONWORKS,"
GLASGOW.

SOLID DRAWN BRASS BOILER TUBES

FOR LOCOMOTIVE AND MARINE BOILERS

RATHER
MUNTZ'S OR GREEN'S PROCESS

MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM.

SILVER MEDALS AWARDED AT CORNWALL POLYTECHNIC,
1872 AND 1876.

THE WELL-KNOWN PATENT SELF-ACTING ORE-
DRESSING MACHINERY, as in operation at most of the
large Mines in the Kingdom and Abroad, is now supplied solely by
THE PATENTEE AND MANUFACTURER, MR. GEORGE GREEN,
Mining Engineer, AT GREATLY REDUCED PRICES; also all
descriptions of Mining Machinery, including

GOLD AND SILVER AMALGAMATING MACHINERY, complete.
Stamp Mills, Water Wheels, Steam Engines, &c.
ROLLER SHELLS FOR CRUSHING MILLS—a speciality.

SPECIAL DESIGNS FOR EXPORT AND DIFFICULT TRANSIT.

Prices and particulars on application to the Manufactory,
ABERYSTWITH, SOUTH WALES.

DUNN'S ROCK DRILL,

AND
AIR COMPRESSORS.

FOR DRIVING BED ROCK
TUNNELS, SINKING
SHAFTS, AND PERFORMING
OPEN FIELD OPERATIONS,
IS THE
CHEAPEST, SIMPLEST,
STRONGEST, & MOST EFFECTIVE
DRILL IN THE WORLD.

Dunn's Patent Rock Drill Company
(LIMITED).

OFFICE,—193, GOSWELL ROAD
LONDON, E.C.

PATENT
"INGERSOLL ROCK DRILL,"
LE GROS, MAYNE, LEAVER, & CO
60, Queen Victoria Street, London, E.C.
5, PARK PLACE, NEW YORK, U.S.A.



The following ex-
tracts from the re-
ports of Judges in
awarding Medals:—

"2. Its simple
construction ensures
durability, &c.

"4.—The steam or
air cushions at each end of cylinder effectually protect from injury
"5. Its having an automatic feed, giving it a steady motion, &c.
"6. Its greater steadiness and absence of jar and vibration ex-
perienced in other drills, which is very destructive to their working
parts, &c.
"7. Its greater power is some FORTY PER CENT. in favour of the
Ingersoll."

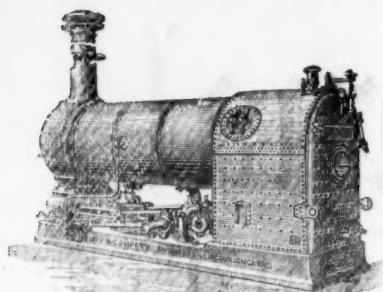
Medals awarded for several years in succession "For the reason
that we adjudge it so important in its use and complete in its con-
struction as to supplant every article previously used for accom-
plishing the same purpose."

Estimates given for Air Compressors and all kinds of Mining
Machinery. Send for Illustrated Catalogues Price Lists, Testi-
monials, &c., as above.

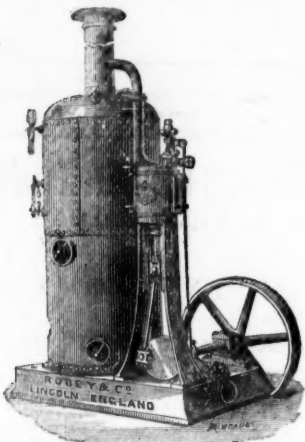
ROBEY & CO., ENGINEERS, LINCOLN.

AWARDED GOLD MEDAL, PARIS EXHIBITION, 1878.

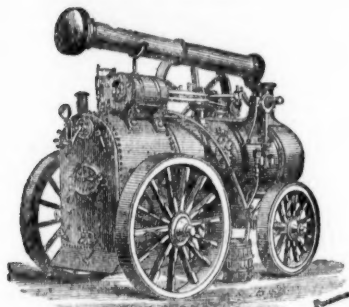
SOLE MANUFACTURERS OF THE



THE PATENT ROBEY FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED. 4 to 50-horse power.



VERTICAL STATIONARY STEAM ENGINE AND PATENT BOILER COMBINED. 1½ to 16 horse power.



SUPERIOR PORTABLE ENGINES. 4 to 60-horse power.

No Expensive Brick Buildings or High Chimney required.



PATENT IMPROVED ROBEY MINING ENGINE

OF ALL SIZES, FROM 4 TO 50-HORSE POWER.

Some of the advantages of this New Engine are as follows:—

SMALL FIRST COST. SAVING OF TIME AND EXPENSE IN ERECTING. EASE, SAFETY, AND ECONOMY IN WORKING. GREAT SAVING IN FUEL.

This New Engine is free from all the objections that can be urged against using the Semi-Portable Engine for permanent work, because it possesses the rigidity and durability of the Horizontal Engine, and at the same time retains the advantages of the Semi-Portable in saving time and expense in fixing.

THE PATENT ROBEY FIXED ENGINE

(Also above illustrated) is admirably adapted for driving Rolling Mills, Saw Mills, Brick Machinery, Pumping Machinery, and all descriptions of Fixed Machinery.

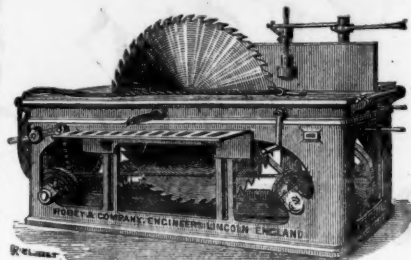
ENGINES UP TO 200 EFFECTIVE HORSE-POWER ALWAYS IN PROGRESS.

Prices and full particulars of all the Machinery here illustrated on application to the Sole Manufacturers,

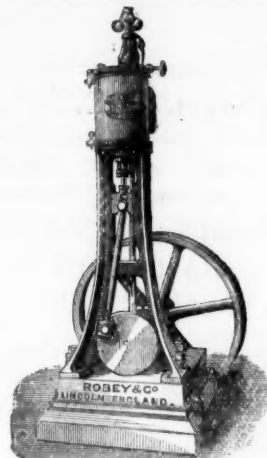
ROBEY & CO., ENGINEERS, LINCOLN, ENGLAND.

London Office: 117, Cannon Street, London, E.C.

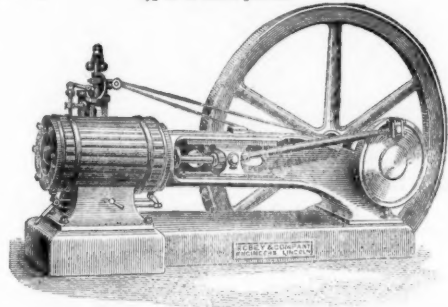
References can be given to upwards of 5300 ENGINES of all sizes, from 2 to 50-horse power.



SELF-ACTING CIRCULAR SAW BENCH.



PATENT VERTICAL ENGINES. 1½ to 16 horse power.



IMPROVED HORIZONTAL FIXED STEAM ENGINE. 4 to 60-horse power.

MECHANICAL VENTILATION OF MINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE AND CO.) undertake the Construction and Erection of their Colliery Ventilation Fans, of all sizes up to the largest required quantities of air. The leading features of their system are now generally known. Some of the specialties are: The absence of necessity for costly erections in masonry and brickwork; the small space required for the Machines, and the moderate first cost of the whole.

As the Fans are in a great measure self-contained, the necessary seats and connection with Pit are of a simple and inexpensive character. They can be arranged to be placed below ground when required, and also to work on

Drawing Shafts. Certain sizes are often used to assist in Furnaces, with good effect. [Estimates and further information will be prepared on receipt of the necessary particulars.]

FOR SINKING PURPOSES, and also for places where small quantities of air are needed for Ventilating purposes, a Special Fan is made, in various sizes, with small engine combined, complete, arranged for both forcing and exhausting air.

NOISELESS BLOWING FANS, for Smithy Fires, and other purposes.

TURBINE WATER-WHEELS, specially designed and adapted for use in Coal Mines, for high falls of water, for the purpose of developing water power, where it is available, for use in hauling, pumping, and other works.

The Firm, having had an experience of nearly twenty-five years exclusively in the above Special Departments of Engineering, are prepared to advise on any matter affecting the application of Fans or Water Power in Collieries or elsewhere.

COAL-CUTTING MACHINERY, WINDING, HAULING, AND OTHER DESCRIPTIONS OF STEAM-ENGINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE & CO.),

PNEUMATIC AND HYDRAULIC ENGINEERS

(SOLE PROPRIETORS AND MAKERS OF SCHIELE'S LATEST PATENTS),

2, CLARENCE BUILDINGS, BOOTH STREET, MANCHESTER.

BELTING versus GEARING.

Of late years a great change has been gradually taking place in the Mills and Manufactories of Lancashire and Yorkshire by the substitution, betwixt the Engines and Shafting, of Belting for Gearing, thus doing away with all noise and vibration, as well as wonderfully reducing the cost of repairs; and so manifest are its advantages, that driving by Gearing will soon be the exception.

As a still greater improvement, we beg to submit our Wrought-iron Drums (Rodgers's Patent), of which we are the Sole Makers. Their special merits may be briefly stated as follows:—

- 1.—These drums absorb less of the power of the engine in friction than any other mode of driving.
- 2.—Leather belts on these drums will drive considerably more than cast-iron ones, and the belts last much longer.
- 3.—These drums are not only considerably lighter in the larger sizes, but also infinitely stronger than cast-iron ones.
- 4.—In case of fire they suffer little damage. We have repaired many hundreds that have been in very serious fires, generally at about 25 per cent. on first cost.
- 5.—For MAIN DRIVING purposes they are invaluable, especially in case of a new mill, as they do not require such substantial and heavy building construction as is necessary in ordinary cases to withstand the constant vibration of gearing.



6.—The wrought-iron drums and belts are more easily and quickly fixed than gearing.

7.—Greater economy in steam power, as it requires less power to transmit the same effective force with belts than it does with gearing.

8.—Very much greater economy in subsequent repairs, as compared with gearing.

9.—The power is transmitted evenly, faithfully, and noiselessly, and without the vibration arising from defective or worn gearing.

10.—They require no cases for transport or shipment.

In support of the foregoing statements, we may say we have already supplied upwards of 20,000 of these Drums for use in Great Britain and Ireland, and have also exported them largely throughout the Continent of Europe, India, and the British Colonies.

These Drums being made by special machinery, can be made any diameter up to 24 feet, and also any width up to 4 feet, and to fit any size of shaft.

FOR PRICES OF RODGERS' PATENT WROUGHT-IRON DRUMS, APPLY TO
HUDSWELL, CLARKE, AND RODGERS, RAILWAY FOUNDRY, LEEDS, ENGLAND.

SOLE AGENTS FOR LANCASHIRE, CHESHIRE, AND NORTH WALES:—WELCH AND SCOTT, MARKET-STREET, MANCHESTER.

Original Correspondence.

THE COMMISSION OF ENQUIRY ON COLLIERY ACCIDENTS.

SIR.—The mining community anticipate, no doubt, that great benefits will arise from the enquiry now being instituted by the Commission appointed by Government, and that the result of the enquiry will be a deeper insight into the causes of colliery explosions and mining accidents generally. From the knowledge thus obtained we trust they may be able to point out some means of preventing them. It would be advisable to give the widest scope for the receiving of suggestions on the subject, not only from the examination of scientific persons and mining engineers before the committee, but also in having the benefit of communications in writing from those who may be well able to give advice on the subject but do not wish to undergo the trouble of an examination.

There has generally been great difficulty in finding out the cause of colliery explosions; there apparently must have been fire-damp present in the first instance to cause the explosion. This may have been greatly augmented and rendered more disastrous by coal dust in the mine; still it is highly desirable to know by what active means the accident has occurred. Were there indications of gas observed in any part of the workings before the explosion, or is it to be explained on the supposition that a "blower" or sudden issue of fire-damp has come off and spreading over a certain area of workings came in contact with imperfect or insecure lamps, or perhaps even naked lights? An extensive fall of stone in the goaf of a mine has the effect generally of forcing gas into the airways and workings perhaps at a high velocity; it is necessary then to provide against all such emergencies in fiery mines, such as blowers, falls in the goaf, &c., by the use of safety-lamps, in which the utmost reliance can be placed in any explosive mixture, whether at a low or high velocity.

The height of the barometer does not seem to have much bearing on the cause of colliery explosions; but a falling barometer, more particularly from a high reading and just after the fall has commenced, seems to have a marked influence on the occurrence of explosions, at least in ill-ventilated mines. The gas being in a higher state of tension under these circumstances will issue in larger volume, and be more liable to spread into the working parts of the mine. The supply of air in a well-ventilated mine is ample to dilute the gases under ordinary circumstances, even in the case of a quick decrease of pressure from a high reading of the barometer. It has been observed that seldom more than one explosion happens at the same time or in the same day; but those that do occur are usually separated by a considerable distance of time. It is also observed that most explosions occur in the winter months of the year, and no satisfactory explanation has been given of this. This is the more remarkable when it is known that, with furnace ventilation at least, the colder the atmosphere the more will the ventilating power be increased, other conditions being the same.

The following gives the height of the barometer at the time of the principal colliery explosions in 1877:—

No.	Date, 1877.	Lives lost.	County.	Reading of barometer.
1.	Jan. 23.....	18	Lancashire	Above 30 in.
2.	Feb. 7.....	10	ditto	ditto
3.	March 6.....	8	ditto	ditto
4.	March 10.....	18	South Wales	ditto
5.	Oct. 11.....	36	Lancashire	30 in.
6.	Oct. 22.....	207	Blantyre	29.8 in.

The highest reading of the barometer was 30.9 in. on Oct. 6; the lowest reading 28.8 in. on Nov. 12.

Arranging the explosions in Great Britain in the year 1877 according to barometrical pressure, we have—

Explosions	3 lives lost when pressure was above ...	Inches.
25	ditto 113	ditto from 30 to 30.5
15	ditto 223	ditto from 29.5 to 30
6	ditto 6	ditto 29.0 to 29.5
49	ditto 345	

We observe from this statement that 28 explosions occurred when the pressure was very high—30 to 30½ in. and upwards; that 15 explosions occurred, accompanied with the greatest loss of life, when the pressure was at a medium, from 29½ to 30 in., and only 6 explosions occurred when the pressure was very low.

The presence of carburetted hydrogen gas is indicated in various ways by what are called safety-lamps; in some, as in the Stephenson lamp, the flame is speedily extinguished; in others, as in the Davy lamp, the gas burns within the gauze, but the lamp in this state is highly dangerous, as the action of currents, coal dust, &c., may cause the flame to pass to the outside, and thus give rise to an explosion, more or less extensive. Ansell's indicator is an instrument constructed on the principle of the diffusion of gases, and thus gives warning of a small percentage of gas in mixture with the air. It indicates also the presence of carbonic acid gas, and this to some extent neutralises its usefulness in indicating the presence of carburetted hydrogen. Another instrument, invented by Mr. E. H. Living, shows the presence of ½ per cent. of carburetted hydrogen in mixture with the air. It consists of a brass tube 8 in. in length, 1½ in. in diameter; within this tube are placed two platinum spirals, the one being covered with a glass tube, the other is open to the air. These platinum spirals when acted upon by a magneto-electric machine reflect the light upon each side of a screen placed within the brass tube. If no gas is present each side of the screen is equally illuminated. If carburetted hydrogen gas is present that side of the screen opposed to the open platinum spiral appears brighter than the other, and according to the percentage of gas is the difference of illumination the greater.

With ½ per cent. of C.H. gas the relative illumination is as 1 to 1.24
 1 per cent. 1 to 1.65
 2 per cent. 1 to 2.78
 3 per cent. 1 to 5.1
 4 per cent. 1 to 22
 5 per cent. 1 to 64

The relative illumination of the two sides is measured by a photometer.

The instrument may be applied in examining the various returns of a coal mine; it would show whether the quantity of gas assigned to each split or division is sufficient for the quantity of air allowed. The air may be increased or decreased, according as the percentage of gas, as indicated by the instrument, in mixture with it is great or small. The instrument when placed in each return of a mine would indicate the relative proportion of gas in each, and would also show from time to time the varying percentages of gas in each. If any unusual quantity or percentage is observed the cause would be immediately sought for, and remedied, if possible, by increasing the amount of air, or carrying off the gas by another channel. The appointment of a person whose special duty it would be to examine every day all returns and other parts of a mine where fire-damp is likely to appear is suggested. The instrument may be utilised in this way both in the day and night time in mines requiring special precautions.

IMPROVED METHODS OF VENTILATION AND ILLUMINATION.

The former of these items—i.e., improved method of ventilation—has now been generally admitted to be most advantageously obtained by mechanical means as compared with the old systems of furnace and steam jet. The steam jet may be at once discarded, as it utilises the smallest amount of efficiency at the expense of enormous and expensive machinery to produce the steam necessary to induce the ventilating current. The furnace, though effective in deep mines from the application of heat to diminish the comparative weight of the upcast column or return air, is still an expensive mode of utilising the difference of density between the two sources of external air, and theory and practice both combine in advocating mechanical means for producing this disparity of density.

The modes of utilising mechanical power may be simply divided into two heads or classes:—1. That by which the air is exhausted by depression produced by centrifugal action; and, 2, that which is produced by "variable capacity" in the exhausting machine.

The various systems which have so far been brought under public

notice, as well as their theory, will form part of our subsequent communication along with the other particulars of the work allotted to the Royal Commission.

M. E.

SAFETY-LAMPS.

SIR.—With regard to the unusual course taken by Col. Shakespear in addressing you with reference to a letter and my reply to it, which appeared in a South Wales paper, it is with reluctance I again trouble you. The main portion of Col. Shakespear's letter is merely a repetition of his former one, and for any information he requires, can only refer him to the statements I made in my communication inserted in the *Mining Journal* of the 26th, which I have so repeatedly proved in public. As to my desiring an issue with him he is quite mistaken, as I have no desire to have anything to do with him or his lamp. After the failure of the latter his remarks sound very much like "sour grapes." Had I thought in time that he would have taken such offence at the word "colza-lene" it might have been altered to his satisfaction, and I fail to see that it would have improved my education had he made me believe that colza is made from cabbage seeds. However, as I have neither time nor inclination to trespass further on your valuable space, or be a means for keeping the subject open for interested motives, with me the matter must drop, with the assurance that I shall at all times be willing to prove my statements to anyone who may be concerned in the use of safety-lamps on my hearing from them. This course, I have no doubt, will have more effect with practical men than such compliments paid by Col. Shakespear to the large number of users of Protector Lamps, as stated by him in the South Wales paper—"That it only shows how easily they are misled."

W. E. TEALE,

Manager of the Protector Lamp and Lighting Company (Limited), Manchester.

April 29.

COLLIERY MANAGEMENT.

SIR.—It is of such vital importance from every point of view that there should be a clear understanding about the meaning and requirement of section 26 of the Coal Mines Regulation Act that I am induced to ask you to give insertion to a statement of the following facts.

As most, if not all, of your readers know Mr. Greaves, the certificated manager of the Stanley Colliery, stated in his evidence at the inquest on the bodies of those killed by the explosion on March 4 that he had taken the daily supervision of the pit by means of reports of the deputies under him, those reports being sent to his house three miles away, and also by means of occasional personal examination of the pit, with visits to the works when necessary. He said also he considered that a carrying out of the Act. On March 27 Mr. Macdonald, M.P., drew the attention of the Home Secretary to this evidence, and asked him what view he took of it, to which enquiry it has already been stated by Mr. Pickard he received the reply from Mr. Cross—"I do not look upon the opinion of Mr. Greaves as correct. The provisions of the Act are not complied with by his practice."

It is to be regretted that neither the question nor the answer appeared in the Parliamentary reports of any of the newspapers, but Mr. Macdonald writes to me under date April 18—"Mr. Pickard is perfectly correct as to answer given by Mr. Cross." Now compare the facts I have just set out with the following, in which I am personally concerned, and about which I write with the official documents before me.

At the half-yearly general meeting on February 25 of a colliery company (limited) in Staffordshire having 2500 acres of mine and four pits (of which company I am a member representing a large interest) it was announced by the chairman of the company that the directors had decided to discharge the certificated manager, and replace him by their consulting engineer, who so soon as he had taken out a certificate was to be constituted their "certificated manager." He further stated the board had decided to permit said gentleman to have engagements elsewhere, and would require him to be present at the colliery referred to only every other day; in other words, they would authorise him to be absent on alternate days.

This was considered by myself and several other members to be so serious a contravention of the Act that I laid the matter before the Home Secretary in a letter dated March 1, and he immediately asked the board for explanations, which were furnished under date March 14 as follows:—"That the gentleman proposed as certificated manager resides within two miles from the colliery. That he has had the active management of extensive collieries for many years, and is known as a most experienced engineer, under which circumstances it was considered that the management of the colliery and the safety of the miners would be more efficiently cared for than if it was under an ordinary and less experienced certificated manager, although he might profess to devote his entire time to the management."

Enclosed with this explanation was a statement by the proposed certificated manager addressed to the board to the following effect:—"In answer to the enquiry of the directors how daily supervision of the mine would be maintained if I as certificated manager did not attend daily at the colliery I should propose to have the daily reports of the mine required under the Mines Regulation Act, which are now delivered at the office before 8 A.M., brought to my house by one of the junior clerks every day, and he would leave the colliery by the 8 A.M. train, and return by the 8.52 A.M. train. When any defect in the works, or anything requiring immediate attention, happened then I would attend at once, and whatever other engagements I might have, if any, would be put off. I would ordinarily attend at the colliery every other day, and when I had any occasion to leave home I should have the daily reports telegraphed to me. I believe by doing as above proposed I should comply with the requirements of the Mines Regulation Act of 1872, and maintain an efficient supervision of the colliery both for the safety of the men and the pecuniary interests of the company."

On March 24 Mr. Liddell on behalf of the Home Secretary acknowledged receipt of this explanation and enclosure, and he at same time forwarded me a copy of his letter, from which I give the following extract:—"He says, 'I am authorised to inform the directors that the Secretary of State has no power to give an authoritative interpretation of an Act of Parliament, but that he has expressed his opinion as to the meaning of the term "manager" in the instructions issued to Inspectors of Mines, of which the following is an extract:—'1st. It is competent for the same person to be manager of several mines whether or not belonging to the same owner provided that the distance between them is not too great for him to exercise control and daily supervision over each mine.—2nd. It is not incumbent on him to visit daily every mine under his management provided that by means of daily reports and by frequent visits he exercises control and daily supervision over the conduct of each mine.' He adds:—'That unless the practical working of the proposed arrangement fully satisfies the provisions of the statute so interpreted the Secretary of State will feel it his duty to take proceedings.'"

This, however, appeared to me so indefinite and so unsatisfactory after what had occurred at Wakefield that on the 23rd instant I communicated to Mr. Cross my belief "that those instructions were perilously similar to, if not indeed precisely the same, as the practice adopted by Mr. Greaves at the Stanley Colliery, and which practice he had condemned; also that his instructions remain, and are unhesitatingly accepted, as to all intents and purposes 'authoritative interpretations' of the Act, inasmuch as all practice in conformity with them is taken as free from blame; also that he would no doubt readily perceive how desirable, indeed necessary, it is that in a matter involving more or less directly the safety of many hundreds of colliers there should be the utmost precision in definition of duty; and further, that it was earnestly hoped he would deem it advisable at an early opportunity to amend instructions in a stringent sense—indeed, in the direction of 'daily attendance' and 'personal supervision,' and thereby prevent a continuance of that 'diffusion of responsibility' which it was the avowed object of the Act to extinguish, and which has proved, and is likely still to prove, a fruitful source of disaster." So far I have no reply from the Home Office; but it will be evident to most, if not all,

concerned that the matter is not in a satisfactory position, and it will probably require persistent attention before it is so.

Liverpool, April 29.

A COLLIERY DIRECTOR.

COLLIERY MANAGEMENT.

SIR.—The Home Secretary, in answering Mr. Macdonald, M.P., when questioned as to the interpretation of Mr. Greaves, of Stanley Collieries, Wakefield, whether such was correct or not, said—"I do not look upon the opinion as correct. The provisions of the Act are not complied with by that. No, Sir, I do not look upon that as a proper reading of the clause. I have said so in my instructions to the Inspectors. I say so now."

Now, Sir, to my mind the answer is most explicit, and is, so far as I can see it, a complete negative to the interpretation of Mr. Greaves and others who think with him. It is high time colliery directors put a stop to such management, and I have not the slightest doubt but such a state of things will be unknown before the present generation dies of old age. Daily supervision it appears should be altered to "daily personal supervision," in order to prevent colliery companies evading the Act, seeing that so many are determined to follow the dictates of a loose morality in such matters having such grave issues. Mineowners labour under a delusion when they think such management is a saving. In the long run it is the most costly. It engenders neglect, carelessness, and unthriftiness, and all kinds of recklessness, both on the part of managers, underwriters, deputies, and all in authority, *vide* Stanley enquiry. BENJAMIN PICKARD.

April 19.

THE LONDON COAL SUPPLY.

SIR.—An editorial paragraph in a contemporary of the 18th inst. states—"If Mr. Thompson's proposal were brought forward by an independent company there is no doubt but that the colliery owners would be most willing to take it up, which, if successful, would certainly revolutionise the London coal trade, the cost of transport from the Tyne being at present 4s. a ton, against 7s. 11d. by Great Northern Railway, and in both cases exclusive City dues." The distance the steamer has to run from the Tyne is actually more than double that of the steamer from the Humber to their respective discharging points, a much more difficult navigation, and even when the steamer has passed the unfinished Tyne piers inwards she is exposed to shipwreck, it being notorious that wrecks of steamers and sailing vessels are constantly occurring within the precincts of the harbour with appalling loss of life, the sea rolling far up the harbour, entailing great risk to shipping at their moorings. The full-powered steamer Mary became a total wreck within the harbour of Shields only a few days since, and a contemporary of the 4th inst. states steamers could not leave the Tyne with coal for the Thames on account of the bad weather, from all which the expansive deep water estuary of the Humber is perfectly free. In my letter in your last week's issue I stated the saving seaboard, *via* Hull, to be 6s. a ton if conveyed in sacks, and 4s. 6d. in bulk over cost of rail transit and attendant expenses, in both cases from identical pits direct to metropolitan consumers' premises, and a saving over Tyne conveyance of 6s. 6d. and 4s. 6d. a ton, in such latter case from Tyne and Hull respectively to metropolitan consumers' premises. Taking into account aforesaid disadvantages with which the transport of Durham and Northumberland coal is weighted, another contemporary on the 22nd inst. sets forth the frequent great detention at the Derrick, the present most expeditious mode of discharging in the Thames in connection with the great loss of time in the crowded docks in the Tyne, you will readily surmise that, however great the saving may appear, I have understated my case, in which course I have adhered to my invariable plan of keeping below the estimated saving—the surest path to ensure confidence. A report to the Court of Common Council this month states the cost of transit to Billingsgate Market by rail was exceedingly high, but by water low. Adverting to the passage "which if successful" at the commencement of this letter, your readers will please note that the proposed steamers differ in no manner from existing screw colliers, except that they will have end-to-end hatches, a greater number of direct-action cranes. The company will own and work their decked lighters and tugs, and have gangs of men in constant employment, reducing the working expenses to a minimum. The steamers, to avoid the intricate navigation of the Thames, with collisions of almost daily occurrence with sea-going steamers, fogs, and dark nights, will discharge into decked lighters at the always accessible deep water ports of Harwich and Sheerness. The member for North Durham, the well-known important colliery and screw collier owner, stated at a public meeting—"To the screw colliers it is to be attributed the fact of Durham and Northumberland coal continuing to supply the London market." As such a marked success has been attained from the Tyne, no railway clamour can render nugatory similar measures from the Humber proving equally successful; indeed, taking precluded matter into consideration, the entirety of the coal traffic per Great Northern Railway must follow the sea route by the proposed system. To give proof of my fullest confidence in the success of the undertaking, I am prepared to receive my remuneration as managing director subsequent to every shareholder having received a dividend of a minimum 10 per cent. per annum on his invested capital. As your Journal permeates the highest circles of coalowners and investors generally, I deem it not out of place to be thus explicit, which I can carry out with every manipulation and manipulation.

Little Tower-street, April 27.

WM. JOSEPH THOMPSON.

OCHRE.

SIR.—Will any one of your numerous readers kindly inform me something about Ochre. Where it is mostly found, cost of working, and how worked to place it fit for market, and its commercial value? Chepstow, May 1.

ENQUIRER.

LEAD AND COPPER.

SIR.—The lead producing capacity of the United States is stated to be 100,000 tons of metal per annum; the consumption is alleged to be 80,000 tons, consequently there is a margin of 20,000 tons for export purposes. This lead (100,000 tons) is largely derived from what the Americans term, in their "high falutin" language, lead bullion; or, rendered into English, silver-lead ore. In Germany there are mines which produce lead at 10¢ per ton. From the plumbiferous sandstones of Mecklenburg lead is produced at 12¢ per ton, one mine alone making 60 tons of metal per day. These sandstones afford from 2 to 3 per cent. of lead. The plumbiferous sandstone measures of Bavaria will shortly be worked by an English company, when lead will probably be produced in unusually large quantities at about 10¢ per ton, including the cost of mining and smelting. With regard to copper the prospect of high prices in the future is all but closed. Fifteen years ago only a limited quantity of copper was obtained from the Spanish and Portuguese pyrites; now the production is 30,000 tons yearly. These ores contain on an average less than 3 per cent. of copper, of which barely two-thirds is obtained—say, 2 units per ton. The approximate produce of ore from three of the chief mines in 1877 was as follows:—

Ore treated at mines. Ore exported. Total.			
	Tons.	Tons.	Tons.
Rio Tinto	520,391	251,360	771,751
Tharria and Catanaa...	231,992	249,299	481,291
San Domingos	178,000	163,000	341,000

Total 930,383 663,659 1,594,042

Besides copper, the pyrites give about 46 per cent. of sulphur, 40 per cent. of iron, traces of zinc, arsenic, and lead. In addition, the San Domingos cinder ore contains 15 to 18 dwts. of silver per ton, and the Rio Tinto 1½ oz. A few grains of gold per ton are also associated with all Spanish and Portuguese ores. The quantity of copper now derived from Spanish pyrites alone is nearly seven times that obtained from the whole of the ores raised in the United Kingdom. America will also, in a short time, add materially to her copper production. The wet process of extraction is one likely to find much favour in that country.

At the Spanish and Portuguese mines the ores are simply roasted in open heaps; the copper converted into a sulphate, the latter

washed out of the ore, and the metal precipitated by means of metallic iron. In this country the burnt ore obtained from the pyrites is ground and sifted, then roasted with about 12 per cent. of common salt, the copper sulphide is converted into a soluble chloride. This copper salt is then removed by repeated washings with water, and the copper precipitated in a metallic condition by means of scrap-iron. The silver present in the ore is mostly obtained by Claudet's process.

THE WYNAAD (INDIA) GOLD FIELDS.

SIR,—In spite of the elaborate diagram which adorns Mr. Harris's letter in last week's Journal, the statements he made in his first letter, and to which I objected, have not been explained, nor does he attempt to reconcile them with the extracts I quoted from his own report written in 1876. Mr. Harris, forgetting that assertion is no proof, simply repeats the statement that the water on the Alpha property is "not more than sufficient to work 15 stamp-heads six months in the year," but evades explaining why he reported to the Alpha directors that they had "a permanent" stream of water sufficient to work a large number of batteries. In his first letter he spoke of "only a small stream," but now he actually admits the existence of no less than four streams. He has now given us three versions on the water supply. Which are we to believe? Apart, however, from these awkward discrepancies as to matters of fact, which Mr. Harris has clearly failed to reconcile, will any of your readers, Sir, venture to render the meaning of the last part of the penultimate paragraph of his letter? Speaking of a stream marked D, he says it "could be joined to the stream C at a parallel altitude about 2½ miles down the gully." What can this mean? Doubtless, School Boards were unknown in the days of Mr. Harris's youth, but when a man is so anxious, as he evidently is, to furnish information "to intending speculators," he ought not only to be quite sure about his facts, but for the sake of your readers, if not for his own sake, he should endeavour to be more lucid in his communications. Mr. Harris is entirely welcome to the advantage of seeing his name in print, and to the weight it may lend to his letters, but I still prefer to remain, as before—
AURUM.
London, April 30.

GOLD MINING IN BRAZIL.

SIR,—From Rio de Janeiro to the centre of the mining district is over 200 miles. The process of assimilating travelling in Brazil to the modern modes of traffic has been, like other things in the country, of slow growth, yet there is considerable change for the better as regards the journey to the Gold District. Twenty years ago we crept along on steep and rugged mule-tracks, not worthy the name of roads—primitive travelling indeed—and what with mud, clouds of dust, torrents of rain, and scorching sun, a very torment prepared for wicked mortals on earth, but still not without its pleasures also, if you happened to have anything like cheerful company, a mind for the charms of tropical vegetation and scenery, and a capital appetite (which seldom failed after an hour's ride) for the everlasting boiled fowl, rice, and smouldering black beans which awaited you in the rancho on the roadside. It took then nine to ten days to accomplish what you can more easily do now with comfort in four days—riding five to six hours daily in the Don Pedro II. Railway cars for a distance of some 90 miles. The steep Serra de Mantiqueira, which with its ramifications forms the tableland of Minas, will be for many years the border between the modern and the primitive traffic. Its mean elevation above the level of the Atlantic is 2500 ft., and only by a very circuitous route can the line of rails reach the gold district.

The Minas plateau itself may be described in a general way as an undulating hilly region, open, or at least not generally wooded, and diversified by ranges and groups of mountains, in the sheltered recesses and ravines of which patches of wood may be seen, while the open country, or the "campos," is clothed with slender grass, mixed with shrubs and brushwood. The principal river is the Rio das Velhas, a tributary to the great San Francisco; the former with an extremely tortuous course of more than 500 miles. Unlike many other mining districts in tropical climates this is well watered, swift little mountain streams and brooks with crystal water come rushing down the bottom of the valley, each side dell and ravine has its own murmuring rivulet; the scattered about farms and negro huts their limpid spring at the door. Sugar, flour, and stamping mills have not seen the smoking stacks yet, and immense water power is still running to waste for want of enterprise and industry.

The year in these latitudes has, properly speaking, only the dry and the wet season. You may call part of the former the winter, which lasts from April to August, for everything is turned upside down out there, a dense and chilly mist is generally hanging about the valleys in those months during the morning hours up to 9 or 10 A.M. The wet season, from November to March, is characterised by heavy showers, of short duration, frequently accompanied by terrible thunderstorms. December is the wet month par excellence, for then heaven opens its sluices almost daily to pour down water equalling—often the annual rainfall of European countries—18 to 24 inches per month. The average yearly rainfall at the St. John del Rey Mines amounts to 62–64 in., and if you couple with such hygroscopical data a mean annual temperature of 68° to 69°, you have the factors which render this country also an eminently fertile one, where you have only to tickle the soil with the harrow to make it laugh with a harvest.

The mining district does not count more than 165,000 inhabitants, and if we state that the relative population is about 100 inhabitants per square league (three miles), it is evident that it must be very scantily divided. These figures include also the slave population. It is, no doubt, greatly owing to this sparse population that the mineral riches and mining have been rather neglected. No people on the South American continent impress the stranger more favourably than these kindly, good-humoured, sober Brazilians; hospitality is one of their national virtues, and we may add honesty and respect for the property of others. Where is the country on our more civilised continent where you can quietly retire to the night's rest without barring your doors and windows? Where could you dispatch thousands and thousands of pounds worth of gold and diamonds through desolate tracts of country under the sole protection of a couple of men? And yet this is daily done in Brazil without scarcely ever hearing of highway robbery or burglary. The genial climate has a somewhat effeminating effect on the population; indolence, holiday making, and procrastination, characterised by the ever ready "patience," are less favourable traces in the Brazilian character. The genuine Brazilian finds his terrestrial heaven in cards, cigarettes, lounging about, and affairs d'amour, and his tastes in these respects he finds no difficulty to satisfy. The Brazilian labourer with his generally very moderate wants as regards means of sustenance which Nature affords so liberally is often of rather independent spirit towards his employers, but with the inducement of good wages and short working hours he is ready and able enough and active for such mining work as requires no particular skill.

Geology, as relating to the genesis of our planet, will ever be of a speculative nature, dealing with abstract theories. With the advance of natural science, however, the problems may assume a more positive character. I would not trouble you with any like theories in connection with the more positive subject of gold mining, if it were not for the circumstance that geological and ethnographical investigations on the Minas district had given rise to assertions and arguments of a general interest. I had once the pleasure of hearing the late Dr. Lund, a Danish professor of highly scientific attainments, on this subject; he had devoted the greater part of a long life to the study of natural philosophy in Minas. If we accept his arguments, Brazil, and particularly Minas Geraes, must be set down as the oldest continent of our planet—a continent which existed already when the rest of the globe was still covered by an universal ocean; or, when only parts of it protruded as some insignificant islands. The fact that the strata of the transition period, which form the greater part of the tableland, are in a more or less horizontal position, without anywhere being covered by more recent formations (a phenomenon without parallel in other parts of the globe), is considered as a proof that Minas was already elevated above the level of the sea before submarine deposits took place.

In the neighbourhood of Lagoa Santa—a small lake on the north-

eastern borders of the gold district—are some very extensive limestone caverns, in fact, a second edition of the Mammoth caves of North America. From these caves Dr. Lund has extracted and enriched the Museum of Copenhagen with fossil remains of quadrupeds of all sorts, from the bones of megatheriums down to the diminutive remains of field-mice, all belonging to the Pliocene period, and all appear to have died out together, while the contemporaneous land shells still exist in the country. But the most interesting of all these antediluvian remains were fossil human bones of simultaneous origin with those of the now extinct animals, as is shown by their degree of decomposition, they being entirely calcined and partly petrified, and of the same race of men as were encountered at the time of the discovery of Brazil. This circumstance speaks for the existence of human beings on the Western Continent long before first rays of history had dawned on the horizon of the Old World.

As regards the rock formations which we meet in the gold district, they belong to the metamorphic class, and are represented by gneiss and mica schist; hornblende schist alternates with the gneiss formation in some parts. The principal repository of the gold is the clay-slate, which alternates and changes into chlorite and talcose schist. It is intersected by innumerable lodes and auriferous veins. The itacolumite also, which is chiefly composed of fine-grained quartz united by thin laminae of chlorite and talc, is gold bearing, but not to the same extent as the clay-slate. I have mentioned already, in a former letter, how prominent a part jacotings takes as a gold bearing formation in Minas. FERD. DIETZSCH.
Darmstadt, April 28.

THE THARSIS SULPHUR AND COPPER COMPANY.

SIR,—Anything more contradictory and inconsistent than the letter of "A Lawyer," which you publish in last week's Journal, it is difficult to conceive. If, as we must suppose, he directly or indirectly represents the Tharsis Company, if this is the best excuse and explanation he can devise for them they may truly say—"Save us from our friends." After setting out carefully in full that the directors are thoroughly conversant with all the claims subject to which they have purchased the mines, and especially that they are incurring a yearly expenditure of 2500, on account of these very claims of Haselden and Gosse, trying to stave off the evil but inevitable day, the "Lawyer" naively asks—first, if the Tharsis Company ever knew of their existence; and, second, whether you have been hoaxed by a bogus action? The innuendo here conveyed is scarcely a compliment to your well-known carefulness, and the subsequent sneering allusion to your paper being the only one occupying itself upon this subject, is either totally unnecessary, or is an insinuation which I find a difficulty in characterising. This attack on you is only of a piece with that on the respectability and responsibility of Messrs. Haselden and Gosse, and the French solicitor. The last item reminds one of the celebrated advice to counsel—having a bad case, abuse the plaintiff's solicitor. Speaking particularly of the Haselden family here interested, you may rely that they occupy, and have always occupied, a first-class position in Spain as lead mine proprietors, and consequently are well known to the leading English import houses in that trade as being honourable and responsible men of the highest standing. I happen to be intimately acquainted with the circumstances out of which has been evolved the extraordinary position in which the Tharsis Company finds itself placed vis-à-vis with the claims in question, and I rely upon your impartial justice to be allowed briefly to explain them, so that at least you may acquit my friends of negligence or time serving in urging their rights, which a certain hypothesis presented in your last would seem to imply. The conjectures upon which you framed certain contingent results would be reasonable enough with the information you then possessed; but, as you justly add, they are mere conjectures, and must be subordinate to the facts of the case. Now, the facts are that at no time have Haselden and Gosse, or their representatives, accepted or condoned the illegal dealing with the property, nor have they ever ceased to claim the fulfilment of the conditions attached to the original agreement for the sale and transfer of the mines to P. Mercier and Co., alias the Huéla Company. One need not be a lawyer to understand the possibility of a contract for sale which shall be dependent upon the mutual fulfilment of certain conditions, and failing the compliance by one or the other of those conditions that the contract shall become invalid. This was essentially the case here. Haselden and Gosse were entitled to certain shares in the Huéla Company as part purchase-money, and these shares have been unjustly and determinedly withheld from them; and in this way, the late Mr. Haselden, who was the ruling spirit, though associated with Mr. Gosse in this business, was suddenly carried off some 15 years ago by cholera raging at Seville, and like many other active and enterprising men with many irons in the fire, left his widow and children unacquainted with the full bearing and significance of many pending matters in which he was interested. Certain parties in Paris profited by this double misfortune to his family, and withheld or concealed some documents entrusted to what the confiding owner thought honourable keeping, so that it was several years later before the widow and sons became fully aware of their rights. From the moment, however, of their acquiring perfect knowledge of the iniquitous fraud which had been perpetrated they began, and have never ceased, to urge their claims—first, by appeals to the honour and good faith of P. Mercier and Co., alias the Huéla Company, and subsequently, by appeals to the legal tribunals of France and Spain. What the directors of the Tharsis Company choose to tell their shareholders as being, that the case has been judged over and over again against Haselden and Gosse, simply means that so far their representatives have been bandied backwards and forwards from the French courts to the Spanish courts, and vice versa. Only technical points have so far been argued, and the merits will now be decided. Anyone acquainted with the delays and vexations of foreign law will not be surprised at the delays arising from all the appeals and impediments which a rich and powerful company, unwilling to fulfil their engagements abroad, could put in the way of Haselden and Gosse. Even in England six years are sometimes occupied in getting a decision of the House of Lords after the various stages of litigation, and in France and Spain together, one after the other, the delay will naturally be much greater. But if the Tharsis Company do not know it already, they may rest assured that no time, trouble, or expense will be spared by the representatives of Haselden and Gosse in prosecuting their claims, and I think the fact of their at length obtaining a final judgment in their favour in the French courts ought to be good warranty for this assertion. It is all very well for "A Lawyer" to attempt to lay down the law and to try and prove that the Tharsis Company are unassailable because they happen to reside in Scotland. We know the law as well as he does, and we have sense enough to see the weakness of his arguments, blowing hot and cold with the same breath.

The Tharsis Company have blindly, and with overweening confidence, accepted or inherited the responsibilities in respect of these claims from the would-be sellers of the mines, and no amount of tall talk or high-handed contempt will avail them to escape from their position in respect of them. They have worked, disposed of the produce, reaped and distributed enormous profits, and would now become owners of property to which they knew attached a defective title—not a defect recently discovered, but one which must have been prominently, if not disquietingly, before them for many years past. Instead, however, of meeting and confuting these serious claims upon them when cited by competent authorities, they prefer to let judgment go by default; not so poor but what they could afford to be represented by counsel like other prudent people, but too unbusinesslike to attend to such trivialities, and certainly not so rich—prosperous as they may be—as to be able to despise the issue involved in claims which are and have been persistently urged by men as honourable, respectable, and responsible as themselves. These claims, with principal, interest, and costs, amount to about a quarter of a million pounds sterling, and the too confiding shareholders may yet wake up some day to find that they have got to pay the money. Pending that most deserved and just result, or some satisfactory compromise of this grave and menacing difficulty, it behoves them to probe a little deeper into the facts and possibilities of the case than they are

permitted to do from the contemptuously bland and self-sufficient assurance of a directors' report, unless, indeed, the said directors are prepared to give them (the said shareholders) their personal guarantee to hold them harmless from the contingency I have referred to. "Magna est veritas et prevalebit," even against the Tharsis Company. An act of tardy and initiatory justice has been done in your Journal to the long-suffering claimants, Haselden and Gosse, who seek for the satisfaction of a just debt, failing which the restitution of the property upon which the debt is a charge. In their name I thank you. The senseless imputation of "A Lawyer" on your credulity and judgment, and the stress laid upon your Journal being the only one which has noticed the claims of my friends can be better answered by you than by me. If he looks an inch beyond Glasgow he will see that other journals are taking up the matter, and he may even find conviction brought home to him ere long through the apparently only convincing channel open to him—a Glasgow paper, VERITAS.
London, April 29.

SABA SULPHUR MINE, WEST INDIES.

SIR,—As these mines will ere long recommence working, a short description of them may be interesting. Saba Island (owned by the Dutch) is situated in the Caribbean sea, about 90 miles east of St. Thomas's, and about 30 miles west of St. Christopher's. It is a steep mountain (an extinct volcano), about 2800 ft. high, and about 6 miles long by 5 miles wide. The mines are in the district of Hell's Gate, in the north-east part of the island, and they are probably the richest yet discovered in the world. The beds (nearly flat) crop out in the side of the mountain, about 600 ft. above the level of the sea, and by wires of about 1000 ft. in length the ore is sent from the mines to the lighters for shipment. The beds of sulphur can be seen cropping out for more than ½ mile in length in the side of the mountain.

Some years since the firm of Henwood, MacNish, and Co. purchased the freehold of the property containing the sulphur, and leased adjoining estates, thus securing all the sulphur lands in the island. They commenced working, and shipped many cargoes to the United States, when operations were stopped by a lawsuit brought against them by an American company. After several years' litigation, the last Appeal Court having decided in favour of the owners, the mines are likely to be vigorously worked. Unlike most sulphur mines, where deep shafts have to be sunk to reach the ore, these beds can be entered at once by galleries, and debris cheaply got rid of over the cliff.

Up to the present time the work has been by open quarrying in the side of the mountain, and a face of sulphur ore averaging 50 per cent. pure sulphur has been exposed—from 200 to 300 ft. in length, and from 12 to 25 ft. in thickness. Other openings made are equally rich, proving the bed is of great extent, probably underlying 1000 acres. The rock sulphur is perfectly cool, and very easy to work. It is also quite free from arsenic and all other impurities, except its gangue—sulphate of lime.

There is little doubt that when these mines are vigorously worked, and the ore concentrated by calcareous and refineries, Saba sulphur will rival the Sicilian produce in Europe, and probably monopolise the trade in the United States, being within ten days by sailing vessel of New York. There is also a probability that the immense quantities of low-class phosphates known to exist in many islands of the Caribbean Sea will ere long be manufactured in the West Indies to supply the many markets with superphosphates, thus saving two freights. Barbadoes alone takes 60,000, per annum of artificial manures. There are also Demerara, Martinique, Guadeloupe, Antigua, St. Kitts, Jamaica, Cuba, &c. The Saba Sulphur Mine, being the only one yet discovered in the West Indies that can be worked, can supply the necessary sulphuric acid, and is, in fact, the key to this trade.—West Indies, April 10. TRAVELLER.

IS IT RIGHT TO PAY ANY PURCHASE MONEY FOR MINES?

SIR,—I am obliged to Mr. Stuart for his candour in admitting I am right in what he pleases to call my "pretension" in the cases I have mentioned as to paying purchase money for mines. As I presume Mr. Stuart is now on his way to Canada, it would hardly be fair to make any criticism on his letter, as he would not have an opportunity of making a reasonably early reply. Mr. Stuart is clearly with me, not only with regard to his own mineral property, but also the Calumet and Hecla and the Silver Islet Mines, and as he now agrees with me in these cases, which are but illustrative of every other mine of real value, I may say there is practically no difference of opinion between us, and I apprehend on his arrival in Canada he will find his co-shareholders, and all other mining adventurers of any standing and experience, thoroughly supporting him in the conclusion at which he has arrived.

Mr. Hoskold also entertains similar opinions to my own, but he is difficult to please, and I am afraid I cannot satisfy him on any particular case, and he looks at the question in an entirely different way to what I do, and, indeed, he takes, I think, erroneous views as to the mode of estimating the value of a mine for the purpose of illustrating my contention. If Mr. Hoskold and myself were engaged to settle the question of purchase money to be paid for any particular mine then we should have to go minutely into many of the questions he proposes, but he will see that I have all along avoided details, and have confined myself as much as possible to showing that if a purchaser can make a large sum of money out of a mine after paying for it he is justified in paying a purchase money. If a mine were of a certain size, and we could determine how much mineral there was in it to an absolute certainty, and how many years it would take to exhaust it, and the cost of getting, and all other expenses to bring the mineral to a market, then the case would be as simple as estimating the price to be paid for the purchase of the bullion in the Bank of England. I cannot, however, do that. With regard to the iron mine I cannot give the details he asks for, but I know sufficient of the cost of mining in this district to justify me in the conclusions at which I have arrived. Besides, the mine is not in the market, and no one but myself knows to what mine I was referring. According to my view it would lead us away from the subject matter of controversy to go into elaborate details as to how one makes up the price to be paid for any particular mine. My object has been to demonstrate that it is right to pay purchase money for mines when the state of the mine shows that a purchaser can make a large percentage by doing so. The amount to be paid will depend upon the special circumstances of such a case.

With regard to the Devon (Reid) Silver-Lead Mine I cannot ask you to repeat my letter which appeared in your Journal of Nov. 30, 1878, and written altogether irrespective of this controversy. I trust Mr. Hoskold may yet see the letter and give in his views, I may briefly state I showed that in the halvans and lodes of the mine in question there were lead and silver worth 60,000; deduct cost of raising and dressing (5% per ton), 25,000; balance, 35,000; allowing for contingencies, 10,000; or an ultimate profit of 25,000; and for which mine the owner would then take 5000, as the purchase money. Capitalists can not get only 1 per cent. for their money, and yet they will not look at such a mine and realise great dividends. When shall we have the coming man to restore confidence?

I am glad to find Mr. E. Erwen so cordially endorses my general views. I must, however, disclaim possession of the prescience adequate to show in "an unopened mine of definite area and contents of mineral, the duration of the mine, output, profit to the proprietor."

I know a gentleman who employed a spiritualistic medium to examine a mineral property, but I have yet to learn that any success attended his labours. I know of a silver-lead mine in St. Columb in which there is a splendid lode cut at about 6 fms. depth, and think very highly of this mine, not simply on account of the lode struck, but because there are champion or masterly lodes of great value in adjoining royalties running through this royalty, but it would require some expenditure of capital to prove the ground before I could say that this mine is one for which a purchaser would be justified in paying much. The probabilities are highly in favour of value, but when there are so many good mines to be had where a purchaser or his mining engineer can see so much

valuable mineral I should most certainly give them the preference. It is in prosperous times when we can best deal with probabilities. Five years ago I knew a case where parties paid 15s. a ton royalty for an iron mine of a very limited area. Nobody would give it now, for the obvious reason that it is not worth the money, but at the time when such ore as the mine contained was selling at 30s. to 35s. per ton, and the ore easily obtainable, nobody was very much surprised at such a royalty being paid. That the mine contained an immense amount of ore was unquestionable. I know nothing of the results of working it.

The last clause of Mr. Hoskold's letter deserves a remark or two. I contend that I have not confined myself to "wordy arguments," but to arguments based upon statements of facts. Take the Calumet and Hecla. What does it matter what was the cost of raising the 8000 tons of copper in 1876 if the company made 600,000l. clear profit? That fact, and nobody has yet disputed it, and we may (at least I do) accept Mr. Stuart's statement as thoroughly veracious, gives an enormous value to the mine. If, as I said in a former letter, such a result—and I would now say if a result half as bountiful—can be obtained every year, it demonstrates beyond all question or cavil that a purchaser would be justified in paying a large sum for such a mine. If that it is so I have proved my case, and I again say your mining readers, as the intelligent jury, have in that one case sufficient evidence to find a verdict in my favour. I repeat that this and all other cases where there is unmistakably great value to be purchased, prove sufficient, and it matters not one straw what is the precise sum to be paid, and how that amount is to be ascertained. I feel I owe you an apology for occupying so frequently so much of your space, for the question is at present very one-sided, but if Mr. Hoskold, or any other correspondent giving his name, takes us to "fresh fields and pastures new," I may again have to claim your kind indulgence; but the position of the controversy seems to be this—If a purchaser can make his 20 to 50 per cent. by paying for a time a certain value beyond royalties he is justified in giving it.—April 30. ——— WILLIAM JOHNSON.

IS IT RIGHT TO PAY ANY PURCHASE MONEY FOR MINES?

SIR,—Mr. Erwen states that he has read my "long letter in the Supplement to the Journal of April 12." If he had done so carefully, and had taken the trouble to understand it, I think he could not have fallen into the error of misrepresenting my statements, which I find he has done. I have, therefore, to call upon him to sustain his position, and to state positively in your next issue where and in what part of my letter of the date referred to he finds the words which he has attributed to me—i.e., "Is it prudent to pay money for the purchase of mines?" Mr. Erwen further adds that in that letter I "maintain the opinion that this should rarely be done." Now, such words as those which Mr. Erwen has thought proper to quote as being mine do not exist in my letter at all. If, however, we look into the fourth paragraph of a letter written by Mr. Stuart, of the same date, we do find such words. I will quote them. He says, "With regard to the prudence of paying money for the purchase of mines, I maintain the opinion that this should rarely be done." I demand to know what purpose Mr. Erwen really had in tacking on to my letter a portion of that written by Mr. Stuart; and to explain why he made me appear to be on the side of those who say that it is not right to pay any purchase money for mines. I am not neither have I ever been on that side, but I am prepared to prove when the proper time arrives that developed and undeveloped mines are under certain conditions of value, and, therefore, that it is right to pay purchase money for them. It cannot be taken that the readers of the *Mining Journal* can attribute any importance to the opinions of gentlemen expressed upon difficult matters when they are found not capable of accuracy in quotation, and there is no plea whatever for such inaccuracies and flagrant misrepresentation as that Mr. Erwen has allowed himself to fall into, especially after he had been careful to state that he has read my long letter. He is pleased to remark on what he calls "the fallacy of some of my proposals," but he has given no proof whatever that his assertions are true in that respect. I have, however, shown the fallacy he has fallen into when attempting to deal with a mere quotation of plain English. The last thing a gentleman should resort to is personalities, but in his first letter Mr. Erwen asserts that I "can know very little of landowners in Devon or Cornwall whatever," my "experience may be in Spain." Since, therefore, he has elected to show himself so gracious in determining the amount of knowledge I possess on that subject, perhaps he will state, for the benefit of those who know but very little of landowners in Devon or Cornwall, all particulars relating to the landowners' rights or dues in a general way, giving the basis upon which such rights merge in royalties and tonnage dues. It is very curious how men's personal interests will allow them to write wide of the mark. Now, into what does the gist and purpose of Mr. Erwen's letter resolve itself. Why, it seems to me capable of being found in his own words, when he says "I this week offered 500l. for a mineral grant; it was refused, and if I do not advance the chances I shall not get it. Supposing I give 1000l. for it, and am offered 2000l. for it, have I not the legitimate right to accept it although being convinced in my own mind that it is worth more money? Or suppose I put it into a limited or cost-book company, am I not justified in having a reasonable remuneration for the lease?" Now, it is possible that Mr. Erwen had no idea of developing this particular property, and that his sole purpose might have been to obtain the lease by paying 500l., and speculate on the possibility of selling it for 1000l. or 2000l., as the case may be, and get a profit, all of which circumstances might have been in the knowledge of the mine lord, and hence his refusal. I have no objection to offer to such a mode of proceeding when such a transaction is carried on legitimately, and the mine is *bona fide*, but it is the reverse of this I object to. The principal question is, however, can a mine be valued as I have suggested in my first letter? I say yes; and when I speak of determining its contents in area and amount of minerals I mean, as all sensible engineers and experts would mean, not that any man can be found capable of looking into the strata of the earth and determining with precision the amount of minerals contained in any given area as if they were weighed in a balance, but according to the geological structure the experience and judgment of competent persons in mining in similar measures, and taking into consideration all the surrounding circumstances they are enabled to estimate pretty closely for the purpose of a *bona fide* valuation what is reasonable and likely to be derived from the mine under consideration. This being settled, it then becomes a question for the application of certain mathematical formulæ connected with financial experience in determining upon a proper and equitable basis what is the value. Surely this is a better mode than that adopted by many who give a mere opinion, and say "I think it is worth so much," without assigning any reason for such thoughts. I am fully aware, however, that this mode would not receive the support of those desiring to obtain nothing but immediate profit by mere speculation in obtaining and selling mine leases, because its object is equity in determining as far as it is possible when a mine is or is not of a certain proposed value as between vendor and purchaser, but to the purchaser who has to invest his money it has a very different aspect. When Mr. Erwen has thoroughly investigated the different modes of valuing, as practised and applied to the mines of other counties of England than those he has referred to, I am of opinion that he will be in a better position to assist in a profitable discussion of this question.

There is nothing in his letter calculated to impair or disprove any of my statements, but one thing is evident, and that is that the mode of arguing he has chosen to follow is based upon a misconception of the true meaning of the contents of my letter. This is especially the case when the attempts to apply that part of my letter referring to the diminishing of the mine lord's dues to his own case. When I stated in my letter of the 12th inst. that "if the proprietor of the mine containing this ore is in fear less no profit would accrue to him the remedy is in his own hands to get the mine lord's dues diminished, for if an equitable state of things exist the mine lord's dues should only be a moiety of the profit," Mr. Salmon's case, to which I was referring, was that of a developed iron mine, and, according to him, containing a definite quantity of

ore, to the profits of which "Actuary" had taken exception, and implied that consequent upon the burden of the lease it could not be worked to a profit. Why does not Mr. Erwen take the connections of my letters with that of "Actuary" and Mr. Salmon? and why does he lay himself open to the charge of absurdity when he attempts to construe my language to explain and apply to his own case, which might represent a mine no one at present knows anything about?

I should be sorry to believe that Mr. Erwen had not perused the letters in the Journal at all, but there does seem to be a close connection between Ulverston and Devon. H. D. HOSKOLD.
Madrid, Spain, April 28.

IS IT RIGHT TO PAY PURCHASE-MONEY FOR MINES?

SIR,—I have seen a number of letters in the Journal on this subject during the last few weeks, and I certainly think your correspondent, Mr. Salmon, has the best of it. The payment of purchase-money for mines is, as it appears to me, very practically illustrated in the Mine Share Market, where, as a matter of fact, the thing goes on every day, there being, as I understand, no difference in principle between buying the whole of a partially developed mine at a certain price, and buying a share in such a property. Anyone looking at a share-list will see at a glance that the number of partially developed or progressive mines is large as compared to those paying dividends, and the existence of a market for the shares of these numerous undertakings seems to me to prove conclusively that in the estimation of the public it is right to pay purchase-money for mines, just the same as it is right to pay purchase-money for any other commodity.

The abuse of a system is no proof of its being unsound, and it would be simple folly to argue that because one man pays (say) for a horse twice as much as he is worth his neighbour ought to be able to get a horse for nothing at all.

For the payment of exorbitant sums for mining properties investors have themselves to thank. If a legitimate venture is offered to them at a fair price they will shake their wise heads, and have nothing to do with it; but give the same thing a high-sounding name, get other high-sounding names on the directorate, and off they go like lambs to the slaughter. By-and-bye they find that their money is gone where, if they had thought anything about it, they must have expected it to go; and they set down mining as a swindle, button up their pockets, and declare they will have no more of it.

Mining, if legitimately carried on and perseveringly followed, is bound to result in success sooner or later; but we should hear very little of the perseverance or the success if no one was willing to pay purchase-money for mines. It is a simple question between buyer and seller, and if the buyer does not think he is getting value there is nothing to prevent him from keeping the money in his pocket.
Plymouth, May 1. J. FLETCHER PAGEN, F.G.S.

SUCCESSFUL MINING AND SUCCESSFUL MINERS.

SIR,—There can be no doubt that strikes in the labour market have effected varied injuries to all of our more important and stable productions—mining, manufacture, speculative enterprise, and every kind of constructive occupation have suffered from the constant and protracted conflicts between capital and labour. Still the difficulties of the times through which we have passed have effected great and permanent good. Although Cornishmen may congratulate themselves on reforms, mechanical changes, and general economies, introduced through pressure and sore necessity, yet we are compelled to add that but for their tenacity in adhering to old principles, long exploded in the midland and northern districts of England, all the existing reforms and economies would have been recognised and adopted 25 years ago. There remains a great deal yet to be effected before the West of England can claim congratulations from an enlightened and intellectual class of the industrial public.

We have often in your columns observed that success in life is generally achieved by the man of energy, nerve, and judgment, with the power to grasp his opportunity when presented, and tenacity to hold that which he secures. There can be no doubt that money begets wealth, but this money must be used, and not squandered. Industry, perseverance, and money are the mainsprings of success. Success begets confidence, industry industries. Hence the prosperity of Capt. Lyle at Carn Brea, North Basset, West Basset, South Tolgas, Kitty, and many other mines; of Tredinnick at St. Ives Consols, Trenwith, Darlington, and East Croft—the discoverer also of East Pool; of Capt. Thomas Teague at Treavean, North Downs, Tincroft, and many a successful adventure; of the Taylors in Gwenap, Redruth, Cardiganshire, Flint, and Derbyshire; of Capt. Arthur Waters at Roman Gravel, Tankerville, Leadhills, and other valuable properties; Darlington at Minera; Williams at the Van; Dumbell in the Isle of Man; Treffry at Llanescott, Fowey Consols, Par Consols; Harvey, of Hayle, the pioneer of 20 at least successful mines; James at Botallack; Vyvian at North Roskear; Clymo at South and West Caradon, Trelawny, Mary Ann, and East Caradon. All these authorities in prosperous mining were earnest and persevering in their vocations, possessed nerve, judgment, and money, and applied the latter to practical working; and, as we observed, money begat money, while one industry followed another until millions had been gained.

But as mining is now too frequently carried on by vendors, promoters, and executives, nine-tenths of all the losses resulting therefrom are attributable to ignorance and idleness, and not lack of minerals in paying quantities, wherever nerve, judgment, and capital become practically applied. There are now remarkable instances of such results in Cornwall, Flint, Denbighshire, Salop, Cardiganshire, and Yorkshire; we allude more especially to practical operations at South Wheal Frances, South Condurrow, Wheal Pevor, East Pant-Ddu, Lead Era, Pant-y-gwalandd, Bodidris, Rhydalun, Ladywell, Roman Gravel, Bwlch United, Grogwinion, Mynydd Gorrdu, Blaen Caelan, and Pateley Bridge. These mines are the choicest upon the *tapis*, yet it is our intention on this occasion to restrict our observations to two of the number, reserving the others for forthcoming communications.

Firstly, the Bwlch United was introduced by us to the London market at or about the year 1847. It stands to the east of Goginan, which paid at the date in question about 9000l. a-year in dividends, and at one time the price of shares (5l. paid) stood at 500l. each. There was an exceedingly rich deposit of ore discovered at the Bwlch, and at one time as much as 170 tons of ore were sampled in a month.

The mines were not prosecuted to our satisfaction, and as the shareholders supported the local management in opposition to us we retired. We commenced with ten fathom levels or drifts; these the successor dropped to five, three, and then two, and although 100,000l. of lead ore was raised the dividends proved nil. Under practical, economical, and sound management one moiety should have been gained, but the reverse was the result. This was no fault of the mines, but arose solely from defective management. This mineral was raised from the shallow deposits of ore, almost invariably two being found in every productive lead or copper lode, and the deeper one is generally the most productive and profitable. At the Bwlch this upper deposit proved 80 fathoms in length, and held down from close to the surface to about the 50. As usually proves the case under the shallow and above the deeper deposit a barren bar of ground exists, and the Bwlch proved no exception to the general rule. At the 60 the deeper deposit was pierced, worth from 25 to 30 cwt. per fathom; this lode has proved very rich for at least 100 fms. below this point in the adjoining mine, and it is estimated that the ores already realised contained 60 tons of pure silver. The engine-shaft is down to the 100 fm. level, and thus below the 60 there is now an available back of 40 fms. that can be wrought at four points with 10 fms. backs—the 70, 80, 90, and 100 fm. levels. The machinery is in good order, the board practical and earnest, and the local management is placed in the hands of Captain Nicholas Bray. He has already proved himself a practical miner in the rapid sinking of the shaft, rising above and sinking winzes below the 70 fathom level for ventilation, and very shortly a large body of ore will become available for stoping. Thus, with earnest and practical

economy, there is every probability of the Bwlch United soon equaling the Goginan in its best and most prosperous days.

Lead Era: This property has been most favourably reported upon by Capt. Roberts, of East Pant Ddu, Capt. Waters, of Roman Gravel, and other recognised authorities and mining experts. The local manager—Captain J. A. Ede—speaks of having laid open the shale, sand, and other measures identical with their true position in all profitable mines in the flats traversing the millstone grit formation overlying the mountain limestone in the rich mineral district of Flint and Denbighshire. A cross-cut has been extended north 120 yards towards six or more east and west lodes, the first of which will be reached in another month. These lodes, which comprise among others the two main lodes of Minera, will be developed in rapid succession, while it is the opinion of all who inspect the mines that success at an early date is certain. There are operations 500 fathoms north of this cross-cut on the flats, and the agent is confident of unusual success almost daily. In this mine Capt. Ede has opened more ground and done more work for the money and time expended than we ever knew effected by any other agent associated with us throughout a varied experience of 40 years. We some time ago suggested that Capt. Waters, for his expedition in extracting ores and employing so many men in close proximity at the Roman Gravel, should have a testimonial for preserving his men from accident through blasting with dynamite, yet with all his energy, perseverance, and original thought, we cannot but regard Capt. Ede as a noble compeer in the race of progress, and should he secure success at Lead Era we pronounce him unquestionably the rising man of the next decade.
R. TREDINNICK,
Consulting Mining Engineer.

Mildmay Chambers, Bishopsgate street, London.

SKETCHES OF CORNWALL—HISTORICAL, BIOGRAPHICAL, AND TOPOGRAPHICAL—No. II.

SIR,—Sandhill House, near Gunnislake, Calstock, was the residence of Mr. John Williams, of Scorrier, at the time of his death. The following remarkable dream of his has been published in the local papers; but is not, perhaps, known to many of your readers. It occurred in the year 1812. He dreamed that he was in the lobby of the House of Commons, and saw a small man enter, dressed in a blue coat and white waistcoat. Immediately after he saw a man, dressed in a brown coat, with yellow basket buttons, draw a pistol from under his coat, and discharge it at the former, who instantly fell, the blood issuing from a wound a little below the left breast. He heard the report of the pistol, saw the blood fly out, and stain the waistcoat, and saw the colour of the face change. He then saw the murderer seized by some gentlemen who were present, and observed his countenance, and on asking who the gentleman was who had been shot he was told that it was the Chancellor (Mr. Percival) was at that time Chancellor of the Exchequer. He then awoke, and mentioned the dream to his wife, who made light of it. She naturally told him it was only a dream, and recommended him to be composed, and to go to sleep again. He did so, and shortly after again awoke her, and said that he had the second time had the same dream—whereupon she observed he had been so much agitated by his former dream that she supposed it had dwelt on his mind, and begged him to try to compose himself, and go to sleep, which he did. A third time the vision was repeated; on which, notwithstanding her entreaties, he arose, it being then between 1 and 2 o'clock, and dressed himself. At breakfast the dream was the sole subject of conversation; and in the forenoon Mr. Williams went to Falmouth, where he related the particulars of them to all his acquaintance that he met. On the following day Mr. Tucker, of Trematon Castle, accompanied by his wife (a daughter of Mr. Williams), went to Scorrier House about dusk. Immediately after the first salutations, on their entering the parlour, where were Mr. Mrs., and Miss Williams, Mr. Williams began to relate to Mr. Tucker the circumstances of his dream; and Mrs. Williams observed to her daughter, Mrs. Tucker, laughingly that her father could not even suffer Mr. Tucker to be seated before he told him his dream—on the statement of which Mr. Tucker observed that it would do very well for a dream to have the Chancellor in the lobby of the House of Commons, but he could not be found there in reality; and Mr. Tucker then asked what sort of man he appeared to be, when Mr. Williams minutely described him, to which Mr. Tucker replied—"Your description is not that of the Chancellor, but it is certainly that of Mr. Percival, the Chancellor of the Exchequer, and, although he has been to me the greatest enemy I ever met with through life, for a supposed cause which had no foundation in truth, I should be exceedingly sorry indeed to hear of his being assassinated or injured of the kind happening to him." Mr. Tucker then enquired of Mr. Williams if he had ever seen Mr. Percival, and was told that he had not, nor had he ever written to him either on public or private business—in short, that he had never had anything to do with him, nor had he ever been in the lobby of the House of Commons. Whilst Mr. Williams and Mr. Tucker were still standing they heard a horse gallop to the door of the house, and immediately after Mr. Michael Williams entered the room, and said that he had galloped out from Truro (7 miles distant) having seen a gentleman there who had come by that evening's mail from London, who said that he had been in the lobby of the House of Commons on the evening of May 11, 1812, when a man called Bellingham had shot Mr. Percival, and that as it might occasion some great ministerial changes, and might affect Mr. Tucker's political friends, he had come as fast as he could to make him acquainted with it, having heard at Truro that he had passed through that place on his way to Scorrier. After the astonishment which this intelligence created had a little subsided Mr. Williams described most particularly the appearance and dress of the man he saw in his dream fire the pistol, as he had done before of Mr. Percival. About six weeks after Mr. Williams, having business in London, went, accompanied by a friend, to the House of Commons, where, as has already been observed, he had never before been. Immediately he came to the steps at the entrance of the lobby he said—"This place is as distinctly within my recollection in my dream as any in my house," and he made the same observation when he entered the lobby. He then pointed out the exact spot where Bellingham stood when he fired, and which Mr. Percival had reached when he was struck by the ball, and when and how he fell. The dress both of Mr. Percival and Mr. Bellingham agreed with the description given by Mr. Williams even to the most minute particulars.

WHEAL ABRAHAM (Crown).—On the night of Aug. 21, 1803, a flood, supposed to have been occasioned by a waterspout, fell upon the highlands of the parish of Crowan, and deluged the plains and vales below. This terrible inundation entered the valley in which the adit from Wheal Abraham, &c., discharged its waters. Here a river was instantly formed about 20 yards in breadth, which continued for a considerable time. In its progress it broke into one of the adit shafts, and descended into the mine, and in the short space of 15 min. Wheal Abraham was filled with 50 fms. of water. Seven men were drowned, and the remainder, amounting to about 50, escaped with great difficulty. A few years after the above catastrophe a boiler explosion in the same mine killed several men. One of the boilers at South Towan exploded when the miners were near it changing their clothes. Several were scalded to death. This mine has been idle about 20 years. When Tywarhaile was worked by the last company it included South Towan Mine, but I think nothing was done in that part of their sett by them. It included also Wheal Charles and United Hills, and was called Tywarhaile Mines. There is a great deal of copper ore left in these mines, but not enough to pay working expenses at present prices. I think that the last company lost more than 100,000l. in the working. When copper advances to 150l. per ten these mines might be worth attention. There is a very eligible little mine in the same locality richly deserving immediate attention, from which copper ore in large quantities can be raised from under the adit level, which is the bottom of the present excavations. A steam-engine is wanted to pump the water. The adit is about 60 fms. deep. There are four or five lodes in the sett.

BOCONNOC.—About the year 1718 Mr. Thomas Pitt, of Dorsetshire, Governor of Fort St. George, Madras, common ancestor of the Pitts, sometime Earls of Londonderry, the Earls of Chatham, and

the Lords Camelford, purchased this manor and other property from the executors of Lord Mohun. Governor Pitt was the fortunate purchaser of the celebrated jewel still known as the Pitt diamond. This diamond was purchased at Madras, in 1701, of Jamehund, one of the most eminent diamond merchants in those parts, for 20,400*l.*, the sum of 85,000*l.* having been first asked for it. It cost 5000*l.* in cutting, and the chips and flings were valued at from 7000*l.* to 8000*l.* After having been offered to Queen Anne it was purchased by the Regent Duke of Orleans during the minority of Louis XV., in 1717, for 135,000*l.*, 5000*l.* being expended in the negotiation. Its weight is 136½ carats; its value, as estimated by a commission of jewellers in 1791, is 12,000,000*l.* It is almost faultless, and was cut in this country in the form of a brilliant, and is allowed to be the finest in the world, though not the largest. The kings of France wore this diamond in their hats. Napoleon Buonaparte had it fixed in the mouth of a crocodile, which formed the pommal of his sword. It has been stated that it was found in Malacca, in the famous mine of Portael, in the kingdom of Golconda. Its form is somewhat round, 1 in. broad, 1 1-6th in. long, and 3 in. thick. It was stolen during the licence of the great Revolution, but was recovered. With about one-half of the sum realised by the sale of the diamond Mr. Pitt purchased the property in Cornwall of the executors of the last Lord Mohun, and settled himself at Boconnoc. He had two sons, Robert and Thomas; Robert, who succeeded him at Boconnoc, married Harriet Villiers, third sister of John, Earl Grandison. He died in May, 1727, leaving two sons, Thomas and William, afterwards Earl of Chatham. Thomas was Lord Warden of the Stanaries in 1750. He was created Earl of Londonderry in consequence of his marrying the heiress of Ridgeway, who had borne that distinction. This younger branch became extinct in 1764. Thomas Pitt, his son, married Christiana, sister of George, first Lord Lyttleton, by whom he left Thomas Pitt, who on the elevation of his first cousin, William Pitt, to the chief office of the State, when under 20 years of age, was created Lord Camelford, Baron of Boconnoc, in January, 1784. He died in 1793, leaving a son, Thomas, second Lord Camelford, who was shot in a duel by Captain Best in 1804. Boconnoc then passed to his sister, Anne, the wife of William Wyndham, Baron Grenville. At her demise, without issue, in 1865, she bequeathed Boconnoc, with other property, to his nephew, the late Hon. G. M. Fortescue; on whose decease, about four years ago, it descended to his son, Captain Fortescue, the present owner. On the hill above Boconnoc House stands an obelisk, 123 ft. high, erected in 1771 by the first Lord Camelford to the memory of his maternal uncle. Its apex, a block of stone 6 ft. high, was struck away by lightning, and no fragment of it was afterwards found. About 50 years ago I was informed by a clockmaker of St. Austell of the following anecdote concerning Lord Camelford:—He had been out of the country many years, and returned to Boconnoc to take possession as heir to the estate. He came to the house in the garb and manner of a beggar, and asked for relief; but was roughly refused, and ordered off the premises. He went away, changed his dress, and returned in his true character, and dismissed at once those who so treated him.

KENNEL GUNPOWDER WORKS.—Accidents in gunpowder manufacturing have been more rare of late years than they were in former times. I do not remember that any accident had occurred at Kennel for many years before that of last week. It is fortunate that no life was lost thereby. In former accidents there was always loss of life. I recollect the explosion there in the year 1830, when several lives were lost. One man was thrown one-eighth of a mile distance from the mill, and part of his body was found suspended on a tree. It is said that the walls of the mills were not demolished in this late accident. In that of 1830 not one stone was left on another. The foundation was completely swept away. The cause of these explosions is not always known, and that of the last one cannot be accounted for. The roofs of the houses are very slightly made, in expectation that they will be blown up.

A gentleman who knows a great deal respecting the rise of the Williams' family informed me this morning that I over estimated their profits from mines. He said that the chief sources of their riches were their copper and tin trades. They did get a great deal by mines however. I remember that, about 40 or 50 years ago, the late Mr. Michael Williams, on his return from London, said that he had realised 30,000*l.* profit in a fortnight by selling shares in foreign mines.—April 26.

IMPORTANT DISCOVERIES IN CARDIGANSHIRE MINES.

SIR.—During the past few days a course of silver-lead ore, varying from 3 in. to 2 ft. wide in thickness, and solid, has been opened on at surface at the Talybont Mine for 20 yards in length, entirely in unwrought ground, no level having been driven under it. At Cwm Brwyno, in the 80 fm. level, a lode standing whole and untried for nearly 3 mile in length in the grant has been discovered, yielding 2 tons of lead ore per fathom, and increasing in productiveness every foot opened on. The shaft being 104 fms. deep, this course of ore can be opened on in that and the other shallow levels at once, and large returns and profits may be derived from it, as the 20, 56, 92, and 104 fm. levels may be started on it, in addition to the 80, where it is now being laid open.

An equally important discovery has been made at Bwlch United Mines, in the 60, the engine-shaft being now driven to the 100, and no levels but the 70, where the ore has also been found rich, having been driven under it. There is also an important discovery made at New Bronfloyd, whilst other mines in the district are opening out rich courses of ore, and a little time is only required to make them great and profitable mines. Such are the Cambrian, the South Cambrian, and the Camdwr Mawr Mines, whilst the Nant-y-Moch Mine (on the Cwm Symlog or East Darren lode) is about to sink the engine-shaft from the 30 to the 50, at which depth it is believed by most practical miners that a very rich discovery of ore will be made.

TRAVELLER.

CIRCUMSTANCES WHICH AFFECT THE METALLIC PORTIONS OF LODES.

SIR.—Whether the rocks be granite, slate, or elvan, their hardest portions are always quartzose, and in these the lodes are seldom rich, probably because a hard rock is unsuited to the presence of metallic mineral, or the lode when traversing this quartz rock partakes of its nature, and thus affords no place for the reception of other substances of greater value; but whatever may be the cause the fact is well ascertained, but the metallic contents of the lodes are affected not only by the mineral composition of the contiguous rocks, but by their mechanical structure and positions also. The varieties of elvan usually most favourable to riches in the lodes differ slightly as regards tin and copper ores; in the former they are sometimes tolerably productive, even when split into strings in glossy quartzose elvan, whilst in the latter, unless the rock be soft and inclined to decomposition, the lodes split, dwindle, and become unproductive. A clay-slate of a very pale greyish hue, passing into a dull white, not altogether unlike a felspar porphyry (elvan), but in a state of decomposition, accompanies the richer portions of the copper lodes of the mines of Gwennap (Cornwall), also the once rich mines of Perran, and a considerable part of the St. Agnes district, most of the St. Austell tract, and some portion of the Callington district. In all these tin ore is very scarce, although found in the shallower parts of some of them in minute quantities. Notwithstanding copper ores have been plentiful in the same lodes after they quit this pale tinted slate, and enter into a deep blue colour, which is generally quartzose, as at the eastern extremity of the Great Consols and Clifford, in Gwennap, yet in the far greater number of instances the riches either dwindle or suddenly disappear with this change of country, as in the deeper parts of Perran St. George Mines, in Perran, and also some parts of Gwennap district, notably in the eastern part of Tresavean. Copper ores, chiefly pyrites, are found in deep blue clay-slate of the same nature in texture, having a glossy lustre, and very even lamination in the districts of Marazion, Gwinear, some portions of Gwennap and St. Agnes, in St. Austell, and generally throughout the Tavistock district. In this rock the lodes seldom contain tin ore. If the slate assumes a deeper hue the lode contains iron pyrites, and if the rock becomes quartzose the iron pyrites disappear and become worthless. Wherever tin ore abounds the slate

is of a tolerably uniform character, thick-bedded deep blue, which here and there has a greenish tinge, and in many parts having a quartzose aspect, as in Wheel Vor in Breage, Tincroft in Camborne, Poldice in Gwennap, and Drakewalls in Calstock. A diminution in the depth of colouring and a softening in the texture of the rock is mostly an unfavourable omen. The few lodes which afford lead ore occur in the blue and greyish varieties of the slate, and generally at great distances from the granite. On the circumstances which affect the metallic portions of lead lodes I hope to send you a few lines when time will admit of my resuming this subject.

Scorrier, Cornwall, April 30.

CHAS. BAWDEN.

BWLCH UNITED MINES.

SIR.—Whilst attention is being called to many mines in this county which are looking well for entering the dividend-paying list one source of wealth has been overlooked, and now that labour is not only cheap but very abundant it is well that this question should be attended to. For example, this property has returned a large amount of mineral from primitive means of dressing, and if the company would allow me to suggest I should strongly recommend trials to be made on the large (I may say immense) bodies of halvans which are lying comatable to the dressing-floors. The large piles of halvans from the next mine are being cleaned and made marketable for 4*l.* 10*s.* per ton, or about one-third of its value; and with fair prices for silver-lead ore the so-called waste of both these properties would leave two-thirds of their value clear profits to the shareholders.—Goginan, May 1.

[For remainder of Original Correspondence, see to-day's Journal.]

Meetings of Public Companies.

GENERAL MINING ASSOCIATION.

The ordinary general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Friday, April 25, Colonel E. W. SCOVELL in the chair.

Mr. C. G. SWANN (the secretary) read the notice convening the meeting, and the minutes of the preceding meeting, which were confirmed. The report and accounts were taken as read.

The CHAIRMAN said that when he had the pleasure of addressing the shareholders at the last half-yearly general meeting he ventured—somewhat contrary to his custom—to predict that when the result of the then current year's operations were ascertained they would not compare unfavourably with those for the preceding year, when for the first time for some years the directors were able to give the shareholders a dividend. From the report, which had been in their hands some ten days, they would see that his expectations had been realised, or, at all events, very nearly so, the profits for the year's operations having been nearly coincident with those of the preceding twelve months. The increase in their trade had been remarkable in one instance, and that was in reference to the Sydney Mines, where they had sold some 18,000 tons in excess of the previous year. At Lingan, on the contrary, the continued depression in trade and shipping had operated unfavourably upon them, but the aggregate of output and sales showed an increase of 10,571 tons. He would not weary the shareholders with a repetition of what they had heard so frequently lately—the depression of trade—for he was sure they had had enough of it, but he could not help reminding them that these improved results had been arrived at in the very worst year, both in reference to prices and demand, that had been known in Cape Breton since the Association had been working coals there. The improvement was attributable to the greater activity in their agency, and the reduction in prices which they had been enabled to make owing to the lessened percentage of expenses at the Sydney Mines, consequent upon the completion of the new works which had been so long in execution. With regard to the financial results it would have been seen that there was a difference of opinion between the directors and the auditors as to the net profits. The report of the auditors had been circulated amongst the shareholders, who would have seen the reasons for this difference. The directors, on the other hand, claimed that while they had adopted all suggestions of the auditors, with one exception (to which he would refer) they were in a better position to judge of the principles and of the circumstances to which they referred than the auditors could possibly be. The directors had all these matters under their consideration and constant care for the last six or seven years, while the auditors only came to the office once a year, and he thought they should not try to dictate to them what was right in the matter of keeping the accounts and depreciating the property. He could confidently submit the accounts to the shareholders, and under the present circumstances of the association he thought they might fairly do so. He thought their figures and their mode of calculating were quite safe, and in keeping with what was the common practice amongst companies having similar operations. It was a far more equitable arrangement between the present and the future shareholders than the arbitrary scheme propounded by the auditors, and he would, therefore, with confidence take the opinion of the shareholders as to whether they would accept their version of the figures or not. The accounts were made up in the same form and calculated upon exactly the same basis—with one exception—that had been submitted to the shareholders for the last seven years. The exception was that there was an additional charge of 900*l.* a year, which was rather against them than in their favour. With reference to the other matters treated of in the report, the directors, having fallen short of the balance, and the association was now unencumbered, and they did not owe a sixpence except for wages and so on. At the extraordinary meetings in November and December the negotiations in respect to the disposal of the Spring Hill area were thoroughly explained. The delay in the completion of the sale had chiefly arisen owing to the fact that their legal adviser discovered the necessity—or, rather, the advisability—of an alteration not only in the Articles of Association, but also in the Deed of Incorporation of the Spring Hill Company, to make sure that they were acting legally in these arrangements. The alteration had passed through the Legislature, and was now waiting the sanction of the Lieutenant-Governor, which they expected to receive as soon as the Dominion Parliament broke up, and allowed the president of the Spring Hill Company to return to Ottawa. At the same time, however, there was no doubt whatever that the arrangement which had already been explained would be carried through in the form which had been agreed upon. With respect to the disposal of the proceeds of the sale of the Albion Mines the shareholders would have seen that the Halifax Company had at length paid the balance due to the association after a longer delay than was expected or actually sanctioned, but during the interval they had been receiving interest at the rate of 8 per cent. on the balance, so that the directors were not at all dissatisfied. It would be remembered that the Albion Mines netted them exactly 150,000*l.*, and he would tell them in round numbers how that amount had been disposed of. Debts had been paid off to the extent of 52,500*l.*—45,000*l.* in debentures, and 7000*l.* due to their bankers. They had returned to the shareholders in 1874 1*l.* per share, or 27,450*l.*; and they had expended in the execution of the new shaft and other works 43,000*l.*, making together 123,050*l.* They proposed to make a further distribution on capital account of 27,450*l.*, making a total of 150,500*l.*, or 53*l.* more than they had actually received. This they were enabled to do by the depreciation which they had written off, and which the auditors state was not sufficient. The negotiation with the Spring Hill Company relieved them of any hesitation with regard to making a further return of capital, but he had no doubt the knowledge that the association had large balances at their bankers which would enable them to open up the remainder of the area at Spring Hill had facilitated the arrangements which had been made with the Spring Hill Company, and which Mr. Swann had so successfully brought to a close. In 1874 certain resolutions were passed authorising the directors to deal with the proceeds of the sale of the Albion property and with the reduction of capital, upon which counsel's opinion was taken, and it was then decided that the *modus operandi* proposed by their worthy friend Mr. Bircham was perfectly secure. It was by virtue of these resolutions that the directors of the company now proposed to proceed. They would not until they got the actual sanction of the Court of Chancery part with the cash, but it was hoped that during the course of the summer, with the assistance of Mr. Bircham, they would get the authority of the Court of Chancery to reduce the nominal value of their shares from 10*l.* to 8*l.*, and a readjustment of the capital account would then have to be arrived at. With regard to the future, they were hardly in a position to predict what that would be. Everybody knew the position of the coal trade in this country, and this state of depression existed in Nova Scotia to a very great extent. A great deal had been said about the recently imposed import duty on coal, but he did not believe this would do anybody any good. Already there were symptoms that the prices of the current year would not be better than those of last, while the import duty would probably have the effect of increasing the cost of all materials imported from this country and the United States. The mines were in excellent condition, and were never in a better position for putting out a large supply. A great deal of the increase of their Sydney trade was, he believed, due to the facility with which they could now put their coal on board, and the consequent reduction, of the detention of vessels at their wharves. Formerly vessels were detained three, and occasionally as much as six weeks being coaled, but now no vessel need be kept longer than three to four days, and upon pressure they could dispatch a large steamer in a few hours, and this was a great consideration to the shipping interest. In conclusion, the CHAIRMAN moved—"That the accounts as published, and the report of the directors relating thereto, be received and adopted, and that the directors be, and they are hereby authorised to declare a dividend of 4*s.* per share, free of income tax, for the year ending Dec. 31, 1878." It was also proposed that the dividend should be payable on and after April 30.

Mr. ARTHUR JONES, in seconding the motion, said the new import duty had already had the effect of making some of the smaller mining companies in Nova Scotia prepare for sales during the present year at very small prices—indeed, at smaller prices than had been current for a great number of years.

Mr. C. L. NICHOLS (one of the auditors) referred to the importance of setting aside a sufficient sum as depreciation, and expressed his opinion that the provision made by this association was inadequate.

Mr. J. O. RUDING (the other auditor) supported at length the views set forth in the report issued by Mr. Nichols and himself, and moved as an amendment—"That the reports and accounts be received and adopted, subject to the rectification proposed by the auditors, and charging a revenue of 28*l.* 4*s.* 4d. leaving an available balance of 150,500*l.*; and that a dividend of 2*s.* 4*d.* be declared, as proposed by the directors, be declared, and that the directors be invited to give their serious

attention to the rates of depreciation prior to the next general meeting, as also to the propriety of returning 25*s.* per share of the capital, instead of 20*s.*, as proposed."—Mr. W. D. PAINE seconded the motion.

Mr. J. D. HILL said he had all his life been intimately acquainted with collieries and colliery management, and he had no hesitation in saying that the association made twice as much provision for depreciation as the majority of collieries in this country.

Mr. F. CLARK also opposed the amendment, while Mr. SCOVELL, jun., and Mr. OSLOW supported it, but the latter gentleman suggested that the last clause of the amendment should be withdrawn, as he did not see where even the 1*l.* per share was to come from.—Mr. WORSLEY also advocated postponing the question until the next general meeting.

The CHAIRMAN, in the course of his reply to the observations made, maintained that the provision proposed by the directors was amply sufficient, and far more than the great majority of colliery companies set aside. Mr. Ruding wished the life of a shaft to be set down at ten years, while in reality its life would in all probability be from 60 to 100 years. In 1878 the gross profits over and above the working expenses amounted to 19,000*l.*, out of which 4570*l.*, or nearly 50 per cent. of the whole sum, was written off, and in the preceding year the gross profits amounted to 9800*l.*, of which 3433*l.* was set aside for depreciation in one shape or another, so that in the two years 1877 and 1878, although the gross profits amounted to 19,788*l.*, the shareholders would only have had 8900*l.*, or less than 45 per cent. of the whole. (Hear, hear.)

Mr. Ruding ultimately withdrew the last clause of his amendment.

Upon being submitted to the meeting the amendment was negatived, six shareholders voting for and ten against it. The original proposition was then adopted. The retiring directors—Lieut. Col. W. C. Western and Mr. F. W. Bigge—and the retiring auditor—Mr. C. L. Nichols—were re-elected.

The meeting then terminated.

FULLER'S REEF GOLD MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, Cannon-street, on Tuesday, to consider and discuss the particulars and information contained in two letters which had been received from Mr. Fowler, the engineer recently sent out to report on the company's property, and to decide the course to be adopted under the circumstances therein detailed.

Mr. F. WITHERBY occupied the chair.

Mr. THOMAS WILLIAMS (the secretary) read the notice calling the meeting.

The CHAIRMAN said the shareholders would remember that at the meeting held on Feb. 4 the directors announced that they had sent out Mr. Fowler, the engineer, who was recommended to them, and as soon as a report was received from that gentleman it was circulated amongst the shareholders, who had now that report, dated Feb. 17, 1879, and also a previous letter from Mr. Fowler, dated Jan. 18, 1879. The latter raised considerable hopes in the minds of the directors as to the future prospects of the mine, and they were very much disappointed at the tone of the actual report which came afterwards. In that report Mr. Fowler advised—or, rather, suggested—that they should lease the mine for two years, or longer, or any time which might seem good to the board. He had had conversations with one or two shareholders who were not here to-day, who seemed to think that was the best thing which could be done, and, in fact, almost the only thing which could be done. He need detain them but a very few minutes. All that was necessary was to discuss whether the shareholders would agree to this proposed lease, or whether they would abandon the mine and wind-up the company. In the report which Mr. Fowler had sent there was a reference made to Weston and Co. Now, he should like to say a great deal more than he could say on that point, but as he had already been threatened with one action for libel from that quarter he did not want to say much; but he might say that Weston and Co. claimed the sum of 700*l.* altogether from this company for various items, but he might say that the directors had not the slightest intention of paying that 700*l.*, or any amount whatever, except such as was absolutely proved to be their due, and that must be paid. The whole question of what would or would not be paid remained in abeyance for the present, until the directors had agreed to lease the mine. The London expenses would be reduced to nothing at all, as the secretary had kindly allowed the question of his salary to stand over for the time, and the company would share this office (where there were two other companies), but would not pay anything for rent, which would remain in abeyance also. The furniture must be sold, and also the machinery which was lying in the docks, which would bring in a sum which would go towards paying the claims which were still unpaid in London. Therefore there would literally be no expense for two or three years without any increase of liabilities. As soon as Mr. Fowler had arranged this lease, if it had to be arranged, he would come home, and the directors hoped and believed that as Mr. Fowler was a very shrewd man, who had the interest of the company at heart, he would so arrange the lease that the company would be looked after and protected out there during the two years of the term of the lease. In conclusion, the CHAIRMAN moved that the directors be authorised to telegraph full powers to Mr. Fowler to lease the property on the most advantageous terms as quickly as possible for two years, or such number of years as the shareholders might decide.—Mr. HICKES seconded the resolution.

The Rev. Mr. GREENWOOD said there was one difficulty in connection with letting the property; hitherto they had found it almost impossible to trust anyone whom they had sent out there, and therefore what guarantee would they have that the terms of the lease would be properly carried out?

The CHAIRMAN said that instructions would be sent out that whatever the amount of the rent might be, it must be remitted to this country.

A SHAREHOLDER said the objection was that the proposed lessees were claimants against the mine.

The CHAIRMAN said he did not understand that Messrs. Cornish and Weston were necessarily the lessees. He pointed out that if the lessees worked the mine two years the directors would be able to tell whether there was anything in the mine or not, and if it would pay they could take it back, and if it would not pay they could abandon it.

The CHAIRMAN, in answer to the Rev. Mr. GREENWOOD, said there were no large salaries going on over there now.

Mr. COLLETT thought it was rather significant that the very men who had mismanaged the mine now wanted to take it on lease. These men must know something of the value of the mine. There was no doubt the directors had a very difficult task to know what to do for the best. They did not want to give up the property, and at the same time they did not want to incur any liability. He knew the mine well, and knew there was an enormous quantity of ground between the shaft and the tunnel. When they were working down the shaft, when he was there, they were getting 3 ozs. of gold per ton; a year ago they could not work efficiently by the shaft, and were waiting for the tunnel to be completed, but it was not yet completed. As to the vein pinching out in the tunnel, he did not attend much to that, because it was a thing which had happened before in this mine. He thought the persons proposing to take the lease must know there was a large extent of untouched ground. Looking at all the circumstances, he thought the directors had no alternative but to lease the mine and get the rents as well as they could.

The Rev. Mr. GREENWOOD thought that Mr. Fowler should be given the option of selling the property if he got a fair offer.

The CHAIRMAN said Mr. Fowler would not get much for it, owing to the depressed state of affairs.

Mr. HICKES thought the best thing was to let the mine to those people who knew there was something coming from the mine after paying expenses. He himself had no doubt it was a rich mine, and it was a good sign when tributers were willing to take up any mine.

Mr. COLLETT said he should be very sorry for the company to give up the mine entirely. For his own part he rather thought the terms of the lease should be for three years.

The Rev. Mr. GREENWOOD moved that Mr. Fowler be empowered to deal with the property as seemed to him most in the interest of the company. This would enable him to sell the property, if such a course was found more advantageous than leasing it.

A desultory conversation ensued as to the best course to be pursued. In the end the directors were authorised to telegraph to Mr. Fowler to lease the property on the most advantageous terms he could get for two years, or to sell if he deemed it desirable.

A vote of thanks to the Chairman closed the proceedings.

ROMAN GRAVELS MINING COMPANY.

The ninth ordinary meeting of members was held at the Cannon-street Hotel on Tuesday. In the unavoidable absence, through a somewhat severe accident, of Mr. Tufnell Southgate (the Chairman), the chair was occupied by Mr. STEPHEN OLDING.

Mr. F. F. WILSON (the secretary) read the notice calling the meeting.

The CHAIRMAN said there was very little to be added to the information contained in the report and accounts, which enabled the shareholders to judge for themselves of the position of the company. Although from a variety of circumstances, particularly from the fall and continued low price of lead, they had not done so well as they should have done, still they had done much better than many of their neighbours. They had been raising and were still raising very considerable quantities of ore, and if any rise took place in the price of lead, as had recently been the case—though it had slightly receded again—there was no reason why the mine should not be, as it had been, an exceedingly prosperous undertaking. Still, as it was, although they had had to wait for a considerable time for a dividend, yet the directors were able to propose a small dividend at last, as they had to day declared a dividend of 5*s.* per share. They had been content to go on simply earning this for the present. They had been restricted by the fact that lead had been selling at such a ruinously low price, and the directors had been anxious to wait for rather better prices, and, to a certain extent, had succeeded in obtaining a better price, the effect of which was that they were able to declare this small dividend, which they could do well and safely. Since the accounts were made they had sold 500 or 600 tons of lead, and now had a stock of about 300 tons in the bin; therefore, although things beyond their control had militated against them, and had impeded their sales, still the mine had a solid and sterling worth about it, and with a little return of prosperity in the price of lead would pay exceedingly well. He need say no more.

but Capt. Waters, who was present, would explain anything with regard to the working of the mine. He moved the adoption of the directors' and agents' reports and accounts.

Mr. S. YORK seconded the resolution, which was put and carried. The CHAIRMAN then formally announced the declaration of a dividend of 5s. per share, payable on the 20th of next month.

Mr. PETER WATSON (the auditor) said that possibly the shareholders would like to hear some further information from Captain Waters. But, before Capt. Waters made any remarks, he would observe that he thought the report should be considered very satisfactory. Everything was charged up, and altogether the accounts were exceedingly well kept and very satisfactory, they were satisfactory to this extent only, that they were what they purported to be—that they were a true statement of affairs. The ore had been sold, and had given them a 5s. dividend; but when they considered that 2000 tons of ore had been sold during the twelve months for 20,000*l.*, which formerly used to realise instead of 10*l.* per ton 16*l.* or 17*l.* per ton, that would have made no less than 50 per cent. more, and have given them 12,000*l.* more in profit; in other words, it would have given instead of 5s. per share dividend for the last twelve months something like 20s. per share, and that, of course, was a very serious item. As the Chairman had said, lead had been very low during the past six or seven months. There had been great stagnation of trade in this country and in other countries as well; the building trade had been perfectly paralysed. It began eight or nine months ago with a strike in the building trade, and when it was over there came the severe winter, and during the past five or six months the building trade round London and throughout the country had been really stopped, and the building trade, as they knew, took an enormous quantity of lead. Then, again, the export trade to other countries had fallen off very considerably, but during the last month the export trade of this country had been on the increase, and there was every reason to believe they would get a good demand back again to this country from China, Japan, and other Eastern countries, for lead. If so there was a very good chance of a revival of the price of lead in this country, therefore he hoped the shareholders would take heart, and not give away their stock in one of the best mines in the country. He believed Roman Gravel was one of the best mines in this country, and there was great credit due to Capt. Waters for the way in which he had managed it. Everything which Capt. Waters had said of this mine from the commencement had come true, although it had been said he had been over sanguine at the commencement as to what they were going to do. There had been a great outlay, and if the shareholders had not the results in their pockets they had it in another way. In the shape of machinery paid for and other matters. Capt. Waters had been his own architect in laying out the dressing-floors, and any shareholder going to the mine must be exceedingly pleased with the way in which everything had been done. He had laid everything out for a very big mine. During the last twelve months 1000*l.* or 1500*l.* had been expended in machinery, and possibly they would have to spend a little more in that direction. (Cheers.)

Capt. WATSON, referring to the mine prospects, said since the report was written considerable improvements had taken place in the 30 fm. level south. Speaking from memory the value of the 80 fm. level, which had been about 1 ton per fathom, last week improved to 2 or 2½ tons per fathom. They were now entering the great south run of ore, and might look forward to a run of ore from the present workings of 180 fathoms in length. The 65 had been in hand ever since the company started; in other words, they had driven the 65 fm. level through a continuous run of ore since January, 1871, and there was still a great lead there, as there was no sign of shale. At the 80 and 95 they had a course of ore worth 3½ tons per fathom. The 110 fm. level had been driven, corresponding with the 65 end, and looking at all these circumstances they were justified in expecting a profitable mine during the whole continuance of the company's lease. The pumping and other machinery was all in excellent order, and he felt justified in saying that this mine was one of the greatest, if not the greatest, in the country. He might say that in addition to the 300 tons in the tin there were probably 700 or 800 tons broken and on the stulls underground. (Cheers.)

On the motion of Mr. W. GREAME, seconded by Mr. PETER WATSON, Mr. Stephen Olding was then re-elected a director.

Mr. PETER WATSON was then re-appointed auditor. Mr. F. R. WILSON said he had recently visited the mine, and spent a whole day there, and found the mine and everything else in admirable condition. Having seen it periodically every since the company was started, he was able to form an opinion as to the progress of the works, and he stated, without fear of contradiction, that the works of the Roman Gravel Mine were better laid out than those of any other mine in this kingdom. The dressing-floors alone were well worth a visit to the mine to see; they were in admirable condition, and every day the appliances were being improved. As regarded the quantity of ore on the stulls, which Capt. Waters had put under 700 or 800 tons, his own belief was that it was nearer 1200 tons. The mine possessed such features of prosperity as were possessed by no other mine in the kingdom. As to Capt. Waters' ability, the mine spoke for itself. An eminent engineer from the North of England was there the other day, and said he had never seen anything which surpassed the arrangement or condition of the mine.

Mr. SAMUEL YORK said he had also seen the mine, and could confirm all that had been said regarding the excellent arrangements, and the ability with which it was managed. No doubt the cost had been considerable, but he defied any other mine in England to produce the same results for the same amount of money laid out. He fully confirmed everything which Mr. Wilson had said.

The CHAIRMAN, in answer to a question, said the directors hoped to pay another dividend this year. On the motion of Mr. YORK, a cordial vote of thanks was then passed to the Chairman, directors, and Capt. Waters, and the meeting broke up.

HERODSFOT MINING COMPANY.

A general meeting of adventurers in the above mine was held at the offices, Gracechurch Buildings, on Wednesday.

Mr. J. Y. WATSON in the chair.

The CHAIRMAN said he had been going through the accounts with the captain, and found that the actual cost had been 889*l.*, but included in that was 304*l.* for extra work consequent upon taking possession of the mine. This extra cost did not belong to the raising of the ore, and, therefore, the actual cost of raising the ore had only been about 584*l.*, and the amount of ore raised was sold for 719*l.*, which was so far satisfactory. (Hear, hear.)

Mr. J. WATSON (the secretary) then read the report of the agent, Capt. Temby, which was as follows:—

April 28.—I beg to forward you the following report, showing the work which has been accomplished since the commencement of this company, as well as the present state and future prospects of the mine. Perhaps it may not be amiss my referring to the change made in the operations to what it was under the late management. When I took the mine—on Feb. 1—I found it in a very bad state of working, and all operations confined to the bottom level, and only 18 or 20 miners employed driving and stopping. I at once saw the necessity of sinking another 10 or 20 fms., and opening up more stopping ground, and to accomplish this work, by sinking the present shaft and driving a 30 fm. cross-cut, would take 2½ years, at an outlay of not less than 1200*l.*, to reach the lode. I came to the conclusion that a new shaft should be made partly through the old workings from the 104 to the 208 fm. level. On Saturday last the following bargains were set:—The 208 to drive south, by six men, at 84*l.* per fathom; the lode is 2½ ft. wide, worth 18 cwt. of ore per fathom. Nos. 1, 2, and 3 stopes, to fourteen men, at 37*l.* 6d. per fathom; the lode on an average worth 15 cwt. of ore per fathom. The 190 to drive north, by two men, at 63*l.* per fathom; the lode is 6 ft. wide, worth 6 cwt. of ore per fathom; I am still of opinion that we shall soon meet with a great improvement in this end. The rise over the 175 to six men, at 70*l.* per fathom; the lode is 1 ft. wide, producing saving work for lead; we have 3 fms. more to hole to the 160. The rise over the 147, to six men, at 70*l.* per fathom; here no lode has been taken down since my last report. Within the past three months we have had a great deal to do in altering the pitwork, &c., repairing the engine and boilers, also altering the drawing machine, putting in wire ropes, &c., which are drawing a great deal more stuff with the same power; we have also built a new smith's shop, put in a weighbridge, and are making some alterations in the dressing-floors. As soon as this is accomplished we shall be in a position to make regular returns of lead ore. I shall continue to push on the operations in the future as carried on in the past three months, and hope to be able to send an increased quantity of lead to market in the next three months.—F. TEMBY.

P.S.—Since writing the foregoing, an important discovery has been made in the 100 fm. level north; the lode is 6 ft. wide, with a leader of solid lead ore, 1 ft. wide. From the appearance of the lode, I am of opinion that we are likely to have a fine course of ore at this level. We sold on the 28th inst. 38 tons of lead ore at 14*l.* 2s. per ton, and 17 tons at 10*l.* 16s. 6d. per ton, which realised 719*l.* 16s. 6d. The CHAIRMAN said he understood that the agent valued the 190 at 3 tons of lead per fathom.—Capt. TEMBY said that was so, but they had not so recently into the bunch that he should be almost afraid to put down the exact amount. The CHAIRMAN: With this discovery you could give us 30 or 40 tons per month?—Capt. TEMBY said he tried that could be done. Mr. WATSON said if the discovery there continued rich, they would be able to double the returns from that point alone.

The CHAIRMAN said he understood that in front of this discovery in the 190 north there were 200 fms. of unexplored ground, and also a large extent of unexplored ground above it.—Capt. TEMBY said that was the case. He also mentioned that it dipped towards the shaft south.

Mr. O. B. PARRY said there was no doubt this was an important discovery, and in an important place. (Hear, hear.)

Capt. TEMBY said it was a most important discovery. Mr. WATSON said in a report given some few months ago, Capt. Rich, who had examined the mine, recommended that this very point should be pushed forward.—Capt. TEMBY said that at the bottom of the 205 they had also very excellent ground.

The CHAIRMAN said that under the old system of sinking the shaft in the perpendicular and driving cross-cuts it would have cost 1200*l.*, but by the course now adopted of working on the lode the same amount of work was done for 600*l.* in less than half the time.

Capt. TEMBY, in answer to Mr. F. F. Wilson, said the quality of the ore differed considerably for silver. The richer ore was about the cross cut south.

The SECRETARY, in the course of some remarks regarding the quality of the

ore, said that formerly the ore had fetched as much as 26*l.* per ton, and as recently as last January twelvemonth some was sold for 19*l.* per ton.

Capt. TEMBY said one favourable feature was that the ore was easily dressed. The CHAIRMAN said he thought the shareholders might congratulate themselves upon possessing a rich mine, which would yield largely increased returns in a short time, and he hoped the captain would go on increasing the returns.

Capt. TEMBY: I shall do so.

The CHAIRMAN then formally moved the adoption of the agent's report and the accounts, and remarked that the accounts showed a balance of assets over liabilities of 663*l.* 9s. 10d.—The resolution was seconded, and carried.

In the course of a desultory conversation which ensued it transpired that amongst the "extras" which had been purchased were three horses and wagon, new wire rope, &c. The company now does all its own carting. The number of men now employed is about fifty. At present prices it is estimated that the cost will be about 311*l.* per month, so taking the output at 40 tons per month, at the price of 13*l.* per ton, the returns will be 520*l.* per month, leaving a handsome margin of profit. It was also stated that, in addition to the amount of ore mentioned as being on the surface, there are also about 10 tons of fahlers ore which are not included in the estimate. The agent stated that the bottom level has passed through a long run of ore ground worth 1 ton per fathom. It was also stated that to put up a least and 12 stamps extra would cost about 50*l.*, which would bring a further return of about 12 tons per month, and the agent was instructed to proceed with that work at once. Several shareholders expressed their satisfaction with what had been done, and also with the future excellent prospects of the mine.

The CHAIRMAN mentioned incidentally that since he was first interested in the mine 35 years ago it had returned no less than 70,000*l.* in dividends.

Some routine business was transacted, and the meeting broke up.

WEST BASSET MINING COMPANY.

A general meeting of shareholders was held at the mine on Tuesday, Mr. CLAUDE DAUBUZ in the chair.

The usual preliminaries having been disposed of, the report of the agents and statement of accounts showing a profit on the three months' working of 1837*l.* 17s. 10d., reducing the debit balance to 14,952*l.* 16s. 4d.

The CHAIRMAN, in moving the reception and adoption of the accounts, remarked that three months since the amount due to the bankers was over 13,000*l.*, and they had now knocked off 4000*l.* of that sum. There had been a small increase of 500*l.* upon the last account, but this had been caused by the increase in the consumption of coal owing to the past wet season. They had raised 236 tons of tin this quarter, which was an increase of 180 tons upon that raised during the previous three months. The boring machine had enabled them to go further into the ground. The more rapid development of the mine, and the aid of the boring machinery had also somewhat added to the working cost. On the other hand, it would be seen that the returns of tin had been largely increased, 236½ tons having been sold since the last meeting. In this quantity was included an estimated amount of 6½ tons, the produce of about 400 tons of stock of tin-stone sent to the stamps. After making this deduction it was satisfactory to observe that the cost of production had not exceeded 30*l.* per ton, notwithstanding the increased cost referred to. Since the managers' report was issued an important discovery had been made in a cross-cut driving south from the 180, west of Green 15*l.* The south part of the lode had been reached, and it was worth at least 15*l.* per fathom, whilst the level was being driven for 31. 15s. This part of the lode was standing in whole ground to the 124, about 80 fms. on the course of the lode. Mr. JOHN HOCKIN seconded the motion, and it was carried.

The subject of the agreement with Wheel Bassett Mine was mentioned by the Chairman, and after a brief discussion it was resolved.—That the agreement entered into between West Basset and Wheel Bassett Mines for the purchase of Richards' engine be confirmed.

The CHAIRMAN mentioned that on Feb. 28 last, just over 200 shares were sold at 3*l.* 5s. each, and the sum realised was 643*l.* He thought that the committee should be allowed to sell any shares when they could get a reasonable sum for them, and by this he reminded the shareholders it would enable a reduction being made in the balance against the mine. The committee did not desire to bring up the subject of shares so often as it was now, and it was very desirable that they should be granted power to dispose of shares when a good opportunity occurred.

A resolution was passed authorising the committee to dispose of 200 forfeited shares at discretion.

The CHAIRMAN thought that if they could get a moderate price for their tin they might get along very fairly. They must have patience, and he had no doubt that before long they would find the mine in a more satisfactory condition than even now. He was deeply interested in the welfare of the mine, which had not fallen back during the past two years; on the contrary, it never looked better than now.

TEMPLE LEAD MINING COMPANY.

The annual general meeting of shareholders was held on Wednesday, at the offices of the company, Great St. Helens.

Mr. J. W. WILLIAMSON in the chair.

The notice convening the meeting having been read, the minutes of the last meeting were read and confirmed. The manager's report and the statement of accounts, showing a balance in favour of the company amounting to 3375*l.* 1s. 1d., were taken as read, copies having been previously forwarded to each of the shareholders.

The CHAIRMAN said it was with pleasure he addressed the meeting on this occasion, as he was able to speak favourably of the position of the company, and with confidence as to its prospects. His experience of mining had not been always satisfactory, but in this instance he felt very great confidence in attaining success, and that at no distant date. He felt justified in stating that the affairs of the company and the general management of the mine had been conducted with discretion. When operations were at first commenced they were of limited extent, and the money expended upon them was found entirely by the directors and manager, and it was not until discoveries were made that anyone was invited to subscribe capital and become shareholders for the purpose of developing the mine, but as soon as such discoveries were made no energy or money was spared in exploring the lode; in fact, from the moment ore was discovered in the levels to justify the expenditure those levels had been driven with all speed both by day and night, and had resulted in the development of a mine quite equal to if not exceeding in value what could reasonably be expected from the limited extent to which the operations had as yet been carried. It would be remembered that those operations had been conducted by means of levels driven into the mountain side, and it was thought the works might be confined to such levels, without sinking below the deep adit, and consequently without the aid of pumping or drawing machinery, but the ore had been found to be rich in the bottom of the deep adit, and it had, therefore, lately been determined not to confine the operations to the ground above that level, but, while proceeding with them, to prepare for following the ore below by procuring the necessary machinery for so doing, he was under the impression, from his general knowledge of the district, that however good or rich the lodes might be near to the surface, they might reasonably anticipate finding the courses of ore far richer and more extensive in the deeper parts of the mine; it was not, however, intended to sink shafts to take the lode at a great depth, but to follow the ore already found, and which it would be bad policy to neglect if it could, as he believed, be worked profitably with the aid of pumping and drawing machinery, to drive which there was sufficient water to be obtained at all times of the year. While the mining operations had been carried on successfully, at surface some extensive works had been performed. They had constructed a lead for nearly a mile in length, erected two water wheels, a crusher, and various apparatus for dressing the ores, but he regretted to say these surface works had been sadly delayed by the long and severe winter which had just been experienced; as, however, that was now past, and the machinery was nearly completed, he believed dressing would be commenced, as stated in the report, early in the month of May, and he saw no reason why it should not be regularly carried on and a considerable quantity of lead be made ready for market—say, in three months; the price of lead was extremely low, but would perhaps advance within the next three months, and he thought it might be advisable, seeing there were ample means at the command of the company for the present not to put the lead on the market, but to hold it till the price had advanced. The market price of lead was now higher than it had been, and he had reason to think it would further advance within the next few months. He congratulated the shareholders on the result of the operations, which he might say had been from the commencement a continued success, the lode having been at no time unproductive. True, it had at times been richer than at others, and he believed such was the case in all the richer mines of the country. He concluded by proposing that the report and accounts be received and adopted.

Mr. BALDWIN was of opinion that it would be unwise to stock the lead, and recommended that it should be sold as produced. On all other points alluded to he fully concurred with the opinions of the Chairman, and, therefore, begged to be allowed to second his proposition, which was carried unanimously.

Mr. CHARLES THOMAS (the manager and secretary) said the Chairman had entered so fully into the particulars of the position of the company, and the reports which had regularly been published in the *Mining Journal* had described so minutely the progress which had been made at the mine, that there was little left for him to explain. During the past 12 months the various levels had been driven as rapidly as circumstances would permit, tramways had been put down in each to facilitate the removal of the ore, and winzes had been sunk for ventilation; in fact, everything had been done to carry out the originally proposed plan of working the mine. The result of this work had been satisfactory, and it was intended to continue operations in the same direction without cessation, in addition to which the discovery of a good course of ore in the bottom of the deep adit No. 1 would justify the erection of pumping machinery, and the development of the mine below that level. The water-wheel which he proposed to erect for pumping would be of sufficient power for that purpose, as well as for driving an air compressing machine, which he considered it would at some future time be advisable to introduce for the purpose of driving rock-boring machinery, which would enable the levels and cross-cuts to be driven at a much greater speed than can be attained by manual labour. At surface the operations had been prolonged by the unfavourable weather, but were now so far completed that the whole of the dressing apparatus would be ready for

work in the course of one or two weeks, and it would only remain to make an incline and drawing machine for raising the dressed ore from the floors to the top of the mountain to enable the returns to be made. The success which had attended the development of the mine was very considerable, but as the levels were extended into the mountain and depth was attained no doubt much more favourable results would be realised. The letter received from the mine this morning reported considerable improvement in the appearance of the lode in each level, more particularly in No. 1, the deep adit, where the lode, last week reported to be producing 1 ton of lead per fathom, is now increasing in width, and producing 1½ ton per fathom.

Mr. T. P. THOMAS said, as a shareholder, he had inspected the mine and received periodical information respecting the progress that was being made. He fully endorsed every word that the Chairman had said, and placed a very high estimate on the value of the property. He was pleased to find that the machinery which had been erected on the mine was of the very best description, the works had all been carried out in the most substantial manner, and at the same time with unusual economy. He considered that great praise was due to the management, and proposed a vote of thanks to the directors and manager for the very creditable manner in which the whole business of the mine, both practically and financially, had been carried out.

Mr. HERITAGE regretted that a larger number of shareholders were not present to hear what had appeared to him to be a very satisfactory account of their property, and he was pleased to second the vote of thanks to the directors and manager, which was carried unanimously.

The retiring directors and auditor having been re-elected, a vote of thanks to the Chairman terminated the proceedings.

THE PHENIX SILVER-LEAD MINING COMPANY.

IN LIQUIDATION.

On Monday a general meeting, convened at the request of several shareholders, was held at the Cannon-street Hotel. Mr. WILLIAM THOMPSON, of Mansion House Chambers, Queen Victoria-street, was called to the chair, and in a very lucid opening laid bare the instructive history of this abortive enterprise. He (the Chairman) said: I have received many letters from the shareholders, and today I represent my numerous correspondents by their special authority. All of them are greatly dissatisfied with the management, and especially with the managing director, Mr. Henry L. Phillips. The shareholders express themselves in strong terms, and though the action has long been delayed they are thankful for the interest which has at length been taken in their behalf. They wish to know what has become of their money, and if possible to recover it, or some part of it, from those who they believe have grossly betrayed their trust. I will take the meeting back as far as the year 1874, and refer you to a letter reprinted in my circular, which is already in your hands. That letter is dated August 28, 1874, and is addressed by Mr. Phillips to the shareholders on the subject of a proposed sale of the property. The letter quotes an opinion from Capt. Juleff in the following terms:—"I consider you have a most promising mine. In the new engine-shaft, also at the Pigeon Green part, there is a highly promising lode; it is very large, with a fine-looking goseam, such a lode is not often to be met, and a mine can confidently recommend a vigorous prosecution of it." This opinion of Captain Juleff referred particularly to the property which the Phoenix Company was reconstructed to work, and the extraordinary proceedings in relation to this promising mine form a prominent feature for our consideration to-day. The directors of the Phoenix Company received 30,000*l.* (paid-up) from confiding shareholders for the very purpose of working the Penhale, together with the adjoining East Wheel Golden, another mining property, also one of the cluster belonging to the Phoenix Company. But Penhale was never worked at all. This is the conspicuous clause in the indictment against the management. For a single shilling was ever spent upon the Penhale property. The reason why is one of the principal questions before the meeting, as a later stage of Mr. Phillips' characteristically innocent, urged that he had suffered "heavy pecuniary loss" in this Penhale enterprise. (I have in my hand his letter in these terms.) It has been stated, however, that this "heavy pecuniary loss" assumed the eccentric shape of a golden burden of 10,000*l.*, which, by a process hitherto unexplained, gravitated into some one's pocket; in fact, East Wheel Golden, which was obtained on purpose to be worked jointly with the Penhale under the name of the Phoenix, and under the direction of the Phoenix Company, was a fine piece of maiden ground, and this was sold to the Phoenix Company for 11,000*l.*, or theabouts, before any machinery was erected thereon, or any attempt made by the company to develop its well-known resources. The reason of this sale, the authority on which it was negotiated, the terms of the purchase, and the appropriation of the proceeds are subjects which imperatively demand the investigation of the shareholders, who have been so grievously disappointed. Now, as I have already told you, a capital of 30,000*l.* was raised by the Phoenix Company ostensibly to work Penhale and East Wheel Golden jointly, under the name of the Phoenix Company (Limited). Not one shilling was spent on the former, though 40 to 50 tons of ore could have been raised every month. Out of this sum of 30,000*l.*, about 11,000*l.* was spent on East Wheel Golden for machinery and the general development of the mine. That sum of 11,000*l.* is the only disbursement we can trace. I may also observe in passing that Mr. Phillips brought out another cluster of mines with an aggregate capital of upwards of 1,000,000*l.* sterling. This group consists of East St. Just, Cape Cornwall Amalgamated, St. Just United, St. Just Amalgamated, Cape Cornwall Mining Company (Limited), New Great Consols, West Great Consols, New Consols Tin and Arsenic Works, New Consols Silver, Illogan Mines, and others. A complete list is easily to long for exact enumeration. Out of this host of mining enterprises not one has returned a penny of dividend to the shareholders except St. Just Amalgamated. They have all gone into liquidation, and no accounts as far as I can learn, have ever been rendered of these numerous liquidations. I am pursued with unnumbered censures for fixing the attention of the suffering shareholders on these startling disclosures, but I can bear it all if I can succeed in recovering your money or part of it, or if I can trace on your behalf the disposal of these large sums of money, and aid you in bringing the parties to justice. Another point for your consideration is this—the Penhale Mine, which is a most excellent property, has been offered for sale on very favourable terms, and it is for you to decide if you would like to avail yourselves of the offer, to work this valuable property, and to render effective an investment that has hitherto been abortive. I call upon Mr. Pryor to tell the meeting what is his opinion of these mines, and what are their prospects.

Capt. PRYOR said, I can abundantly confirm all the statements of the Chairman. I am familiar with all the proceedings from first to last, and can furnish the most complete accounts of every one of these mines up to the date of liquidation—but after that nothing. Pointing to a map which lay on the table, Capt. Pryor proceeded. Before Penhale Mine was purchased by the Phoenix Company we were working it as the Penhale United Mine, and in sinking from the 90 to the 110, as marked red on the map, we raised and sold about 5400*l.* worth of lead. We were raising 45 to 50 tons of lead per month, and the mine was self-supporting. To my surprise, and to the surprise of everyone, a telegram, and a letter following, instructed me to put the pitwork in good condition, and let in the water temporarily. The explanation was—"Our capitals zone." I immediately made out a statement of all the moneys expended on the mine, after deducting the returns, and I came up to London to submit this statement to the managing director. Mr. Phillips replied, "My dear fellow, you must not use this statement, it will never do to put it before the public. I have not placed half the shares." I said, what do you mean? You told me you had 30,000*l.* capital to erect machinery and work the mine. The mine is self-supporting, and worth more fifty pounds a ton than it was worth shillings when we first forked it to the bottom (then 90 fathoms under the adit). "I have not," Mr. Phillips replied, "disposed of the shares, and we must get the adjoining property (East Wheel Golden) in order to raise more capital." At his request I then went to work to obtain that property, and after a deal of trouble and expense I secured that ground, as I considered, for the benefit of the shareholders of the Penhale United. We dispossessed people who were working it, and they were to have a fair compensation, but as a matter of fact this was never paid. I was also to have 100*l.* for my trouble and expenses for completing this negotiation, but I never received one tenth of a farthing. Gentlemen, this was an excellent property, and if properly worked would have paid well. But from what I have since discovered it is my opinion if there had been a bunch of gold in every shaft you would have had no benefit from it. How could you, when the promoters received upwards of 10,000*l.* to work the adjoining property separately? At the request of Mr. Phillips I made a report of the amalgamation, and this I lay the report which I produce. I can tell you, gentlemen, this is a most valuable property, and I will undertake to say that as soon as the water shall be drained to the bottom I will bring to surface 50 tons of lead in the first month, and by working the mine, in my opinion, this produce can not only be kept up but be greatly increased. The mine is open up deeper levels. The result is all quietly being smothered in liquidation, and all that splendid pitwork, which cost so much money, is left underground both in the engine and flat rod shaft from the adit to the 110 fathom level. Now this is but an illustrative case, and it is by no means the worst I could mention. But how is it possible that mining in Cornwall can pay when it is burdened with ruinous policies and plausible tales, and with promoters' fees and profits? They have closed nearly all the best and most promising mines in Cornwall by this nefarious system, and they are doing their best to close up the rest. Many operations of this school have gone down to Wales to try the same plan there, and they will spoil the mining prospects of Wales, as they have already done those of Cornwall. It is owing to these practices that when you talk to a man of the world about Cornish investments he lifts his shoulders, and says "Cornish mines are swindles." I say they are not swindles—and I ought to know. Neither the Cornish mines nor the Cornishmen are the swindlers. I say it openly and advisedly that Cornwall is still the finest field for mining in the world, and there are no miners superior to the Cornishmen. We can compete in tin, copper, and lead with any part of the world, if we have fair play. We may have been a little crooked in matters of machinery, but perhaps we are growing wiser in that respect, and taking kindly to boring machines and other appliances, so now we can hold our own if we are not to be loaded with 10,000*l.* here, 30,000*l.* there, and 50,000*l.* elsewhere for promotion expenses, and such like. I say no industry in the world can stand this, and it is such work as this that has brought Cornwall into its present plight. All Mr. Phillips' mines are in liquidation, and as to Mr. Warwick, he is liquidator of all Mr. Phillips' mines except New Consols, and these are significant facts, gentlemen, which tell their own story.

A discussion followed, Capt. PRYOR answered several questions which were put by the shareholders, and expressed his readiness to offer any further explanation that might be desired, and to give an account of all the moneys expended on the mines.

The following resolution was passed unanimously:—Resolved, that a committee be appointed to investigate the history of the purchase, working, and sale of the Phoenix Mines, to enquire into the circumstances and the result of the liquidations, and generally to collect information bearing on all the transactions with regard to these mines, and to report thereon. A second resolution confined to Mr. Thompson the task of forming the committee under the authority of the former resolution.

The usual vote of thanks to the Chairman was passed, and the meeting broke up with a strong determination to support Mr. Thompson and Capt. Pryor in the investigation which the shareholders have confided to them.

BLUE TENT CONSOLIDATED HYDRAULIC GOLD MINES.—The directors' and manager's reports give details of the operations of the year 1878, and a statement of accounts have been prepared for presentation at the meeting on Tuesday next. The canal furnished

a good stream of water up to July 1. The total produce of gold was \$92,594.02, being \$11,516.71 less than the previous year; this was caused by the company not having been able to purchase any summer water, except that supplied by the Fall Creek Company late in the autumn, after they had finished their canal. It is satisfactory to note that the yield of gold from the gravel was the richest yet obtained, being 87½ cents to the miner's inch of water. The directors expect in future to get an increased supply of water from the lakes of the Fall Creek Company; the auriferous character and extent of the gravel is now so well established that the production of bullion depends solely upon the amount of available water. The general manager's report states that the Blue Tent canal furnished 350,671 10-hour or 146,116 24-hour miner's inches of water, at a total cost of 2-52 cents (1¼ d.) per 10-hour inch, or 6-04 cents (3d.) per 24-hour inch. In this is included the cost of constructing 67 ft. of snowsheds, repairing breaks, &c. These accidents destroyed 638 ft. of flume. The ditch has also been cleaned out from the head to the tent, many weak places strengthened, and has been enlarged from Omega to Alpha, but the cost of the enlargement has been paid by the Alpha Company, the Blue Tent Company simply repaying them in such water as they not be able to pass beyond Alpha to the Tent. On Gopher claim the work has been more for improvement than for regular work, only the overburden having been removed. They obtained \$5399 worth of bullion, at a cost of \$11,840, leaving a loss on the season of \$6411. It is explained that this is only an apparent loss, as the rich bottom blue gravel, such as they have been washing in South Yuba claim, yet remains to be washed. At Blue Lead they have produced \$16,409 of bullion, at a cost of \$11,173, leaving \$5236 profit. At South Yuba they produced \$70,688 of bullion, at a cost of \$42,323, leaving \$28,365 profit. It is explained that this does not represent the profit of operating on this claim, as nearly all the work performed since the middle of July was preparatory to the coming season, except the work done with the water from the Fall Creek Lakes and Water Company. The actual profit would be about \$40,688. It is very encouraging to find that the gravel improves in quality each season, and the profit will be regulated by the volume and steady supply of water at our command. Hereafter we can depend upon an increased supply of water for the summer months from the Fall Creek Lakes and Water Company, as this company has now completed their ditches, and greatly improved their catchment capacity by the construction of reservoirs, and increasing the height of the dams of their lakes. The operations of this season have scarcely averaged three months' work during the whole year. It is to be hoped that considerable more time can be made the coming season, and with the improved character of the gravel, the better condition of the property for operating, with a much larger volume of water at the South Yuba claim, and the large amount of bottom gravel uncovered, there can be no doubt but that the yield and profits will be correspondingly increased.

FALL CREEK LAKES WATER COMPANY.—The directors' and manager's reports and statement of accounts to Dec. 31 have been prepared for presentation at the meeting on Tuesday next. The cost of construction was materially increased by a strike of the white labourers against the Chinese engaged on the works; this also caused a loss of revenue, as surplus water ran to waste. The canal, however, was completed by the end of August, a result mainly attributable to the energy of Mr. Price, who had also an able assistant in Mr. Hughes, of the Blue Tent Company. Mr. Price's report states that in ordinary seasons the additional water furnished by the lakes and reservoirs will materially benefit the Blue Tent Company, while its sale will yield a good profit to the shareholders; it is the intention of the directors to further increase the storage capacity during this summer. The directors are pleased to say that, notwithstanding the unforeseen delays met with, the profits will admit of a dividend calculated at the rate of 5 per cent. per annum from the date of the payments on account of capital to Dec. 31, 1878, and they accordingly recommend the payment of such dividends. Mr. Price, the general manager, gives the various details connected with the work. As to the Courtney Lakes, he reports that the old dam has been strengthened and raised 6 ft. higher than formerly. The total length of the dam at the top is 300 ft. The whole inner face of the dam has been boarded; the lakes will now retain 19 ft. in depth of water. A few months ago they attempted to ascertain the depth of the lake at its centre, but 100 ft. line failed to fathom it. They also discovered that after exhausting the water and closing down the gates in a few weeks the lake had risen nearly 14 in., and this from no visible inlet, and is due he has no doubt to springs connecting probably with some of the neighbouring lakes situated at a higher elevation, and on the other side of the ridge. This adds quite an additional value to the lakes, as they can now exhaust them of all their water in the summer, and by fall can expect quite a volume of water to send down to Bird's reservoir available for sale. With regard to the sawmill, he says that having it at their command was a very great convenience. The time of completion of the ditch would have been considerably delayed had they not had full control of producing lumber to suit themselves. They have now on hand a large supply of logs for next season's work for the lakes and for the Blue Tent Company and elsewhere. The volume of water at their command this season was very small, because they had been able to do but little work upon the lakes; the delay in the completion of the ditch caused a very great loss in evaporation and leakage, and because they got no benefit from the surplus waters of Fall Creek, Bowman Creek, and Texas Creek, as well as that of several other small streams along the line of the ditch. This, in the course of the next season, will render available quite a large volume of water—how much it is impossible for him to conjecture so early in the season—but he is satisfied that there will be enough to make a handsome return on the amount invested. After this season he will be in a better position to estimate pretty closely the gross and net income of each season, as he will have all the data necessary for such a calculation. What amount may be desirable to yet extend upon the lakes will also depend upon experience gained this season, and you may rest assured that he will use his best endeavours to so steady matters as to be able to advise intelligently.

HOLLOWAY'S PILLS.—For the cure of debility, bile, liver, and stomach complaints this inappreciable medicine is so well known in every part of the world, and the cures performed by its use are so wonderful, that it now stands pre-eminent above all other remedies, more particularly for the cure of bilious and liver complaints, disorders of the stomach, dropsy and debilitated constitution. In these diseases the beneficial effects of the pills are so permanent that the whole system is renewed, the organs of digestion strengthened, and a free respiration promoted. They expel from the secretory organs and the circulation the morbid matter which produces inflammation, pain, fever, debility, and physical decay—thus annihilating, by their purifying properties, the virulence of the most painful and devastating diseases.

FOREIGN MINING AND METALLURGY.

Contracts have just been let for 208,000 tons of coal, required for the Belgian State railways. The prices were lower than those current at the last adjudication, and were, indeed, very discouraging. A strike has occurred among the miners of the Borinage, but at the last dates a partial resumption of working operations was anticipated. The profit realised last year by the Gosson-Lagasse Collieries Company is returned at 91917. Out of this sum a dividend of 14. 16s. per share has been paid, absorbing 86407.

In the absence of important transactions attention has been a good deal occupied in Belgium with the question of the dephosphoration of pig. While awaiting better times, Belgian ironmasters can only report for the present that business is in a feeble state, the offers exceed the demand, and the rolling-mills can only maintain an average production with considerable difficulty. Some notice is being taken at present of the construction of the Mavaretti and Buzen Railway, in Roumania, and the orders for iron which are likely to arise out of it. The length of the line is from 56 to 62 miles, and the total cost is estimated at 360,000. An agent of the English Government is stated to have visited Mons for the purpose of contracting for a considerable quantity of bolts and rivets. An adjudication has just taken place for nine locomotive tenders required for the Belgian State railways; the lowest tender was that of the Marcinelle and Couillet Company, which required 1777 per tender.

The French navigations have regained all their activity, and boats laden with coal have arrived in considerable abundance; the unloading is effected with vigour, and the Paris warehouses which were empty are being rapidly refilled. These remarks apply more particularly to domestic qualities of coal; as regards coal for industrial purposes, there is still a considerable scarcity of orders. Shares in some French colliery companies, especially in the Nord, have regained a little favour; but, upon the whole, French colliery securities have shown weakness.

The Biache St. Vaast Foundries and Rolling Mills Company appears to be in a flourishing position. The total dividend for 1878 is to be at the rate of 16 per cent., and 4314. is to be carried forward to new account. The reserves stand at 179,4934. The metallurgical production of the Fourchambault and Commeny Collieries Company, which stood at 59,540 tons in 1876-7, increased in 1877-8 to 61,000 tons. The net profits of the past financial year were 64,3544.; and after various statutory deductions had been made, the Council of Administration was enabled to recommend a dividend at the rate of 14. per share. Half this dividend has been already paid, and the balance will be distributed on Oct. 15.

In the iron trade of the French department of the Haute-Marne orders, without being considerable, have been tolerably regular; prices have not experienced any change, nothing being said at present about an advance. In the Nord the amelioration in affairs has become more decided, numerous enquiries and proposals having come to hand. The most important Parisian houses have not hesitated to do business at 54. 16s. per ton for merchants' iron at the forge, and this price is now rather exceeded than otherwise, some companies having issued tariffs at 64. per ton. There is an impression a still further advance will shortly be witnessed, and that the general quotation for merchants' iron will be 64. 4s. per ton. The almost general quotation for refining pig is 24. 4s. per ton; a rather important contract has even been concluded recently at 24. 3s. 2d. per ton. There has been rather more animation in the Loire-et-Rhone, without transactions; showing, however, the animation which they usually exhibit at this period of the year.

For the instruction of railway boards, consumers, and the public generally several of the German papers have published a very interesting table of the prices tendered by a number of the leading German, Belgian, and English steel manufacturing companies for a contract for rails for the Dutch State Railway, side by side with the prices tendered by the German companies for a similar contract for a Prussian State Railway (the Main-Weser). In the case of the Dutch contract a Rhenish steel company heads the list with the lowest tender (54. per 1000 kilos.) and is followed by the English and Belgian companies with quotations varying from 54. 4s. to 54. 5s. and these again by German companies quoting from (say) 54. 8s. 9d. to 64. 3s. 10d. The English and Belgian companies do not tender for the German contract, as, by an order of the Prussian Minister of Public Works, these contracts are not bestowed abroad; but the same German companies do tender, and, by a singular coincidence, their quotations vary very slightly, the lowest being 74. 7s. and the highest 74. 8s. The German steel producers are, therefore, evidently giving their countrymen a foretaste of protection, by charging their own Government from 20 to 48 per cent. higher than

the Dutch Government. The similarity of the figures tendered also seems to indicate that they have already arrived at a mutual understanding with respect to minimum prices in the German market.

MINING CORVES AND WAGONS.

Hitherto corves as ordinarily constructed have been from 32 to 36 in. high, thereby rendering it extremely difficult to work them in mines where the distance from the floor to the roof is only 3 ft. or sometimes less, as frequently occurs. To obviate this inconvenience Mr. JAMES TAYLOR, of Gilroyd, Barnsley, proposes to construct the corf so that it is only about 28 or 29 in. high, at the same time that its containing capacity is quite as great as those hitherto in use. By so doing, not only is the corf much easier to fill but it does not require so much of the roof of the mine to be brought down to allow of its passing through. He forms the bottom of the corf of a plate of malleable iron, steel, or other suitable metal, preferably cast in one solid piece with the draw bars, pedestals, and buffers, and having suitable cavities or recesses formed therein to permit of the wheels when placed in position projecting inside through the bottom of the corf for about one-half of their diameter, and thus partly running inside the corf. In order to further economise space and secure simplicity of construction and ease in working the corf he dispenses altogether with the wheel axles, the wheels being fixed independent of each other in the recesses or cavities before mentioned, and fastened therein by suitable metal pins or studs, and in order to allow of their being so fastened, suitable sockets or lugs are cast about midway on either side of each of such cavities or recesses, or in any other convenient position, and are, provided with suitable movable caps, which are affixed thereto by means of screws, or otherwise, so as to allow of the wheels being removed from the vehicle when necessary. The wheel and centre being cast in one piece, the incline pulleys for carrying the rope can be placed much higher than ordinarily, there being no axles to interfere therewith.

With a view to impart increased strength to the bottom of the corf, Mr. Taylor proposes to fix on the outside a broad flange made of steel, malleable iron, or other suitable metal, so as to run all the way round the corf, the corners of which flange are thrown up about 4 in. in order to firmly support the plates, and thus all necessity for any stay bolts is avoided. He also employs corner plates made of steel or any other suitable metal fitted to the body of the corf by screws or clamps, or in any other suitable manner, so as to give additional strength to the entire structure, and as the metal required is cast in solid pieces and easily attached, he by this means avoids the labour and expense attendant upon smith's work whether in fitting or otherwise. The wheels being disconnected with each other go along the sharpest curves with the greatest ease and freedom from oscillation when the corves are loaded with 10 cwt. each. It is obvious that if the corf be constructed of the ordinary height (about 36 in.) its containing capacity will be considerably in excess of those at present in use. Mr. Taylor further remarks that the bottom of the corf may, if preferred, be constructed of several sheets of metal instead of one solid cast sheet, and that the only wood work therein is the inch boarding forming the sides thereof. The improved corf is not only simple in construction but possesses great strength owing to the steel bands and plates, and the firmness with which the various parts are put together, and its durability will be at least four times greater than that of an ordinary corf owing to its ease in running and non-liability to get out of repair.

GALVANIC BATTERIES.—According to the invention of Mr. C. E. BASEVI, of West Brompton, each cell of a battery is formed of a jar or vessel of glass, earthenware, or other suitable material, closed at the top by a cork or otherwise. Through this cork or other cover is passed a block of gas carbon, either platinised or not as desired, and also a rod or plate of zinc, the zinc and carbon being carefully insulated from each other. The object of the cork or other cover is to prevent to a very considerable degree the free escape of hydrogen gas which is given off when the cell is in action. By this means he obtains a battery which is remarkably constant in its action. Any carbon which is a good conductor of electricity, and which will also absorb gases, will do for the negative element of this battery as well as gas carbon, platinum, sponge platinum, platinised platinum; or platinised silver might also be used in the same way. The excitant used with this battery cell may be dilute sulphuric acid or other excitant, such as hydrochloric acid, sal ammoniac, or common salt might also be used, according to the purpose for which it is intended to use the cell.

IMPROVEMENTS IN DYNAMO-ELECTRIC MACHINES.

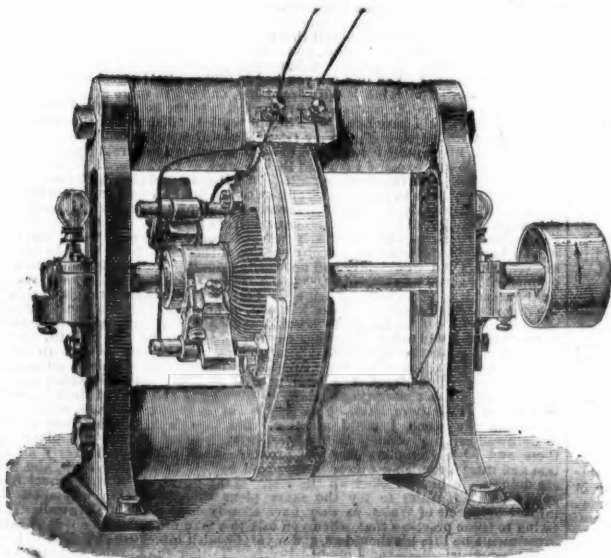


Fig. 1.

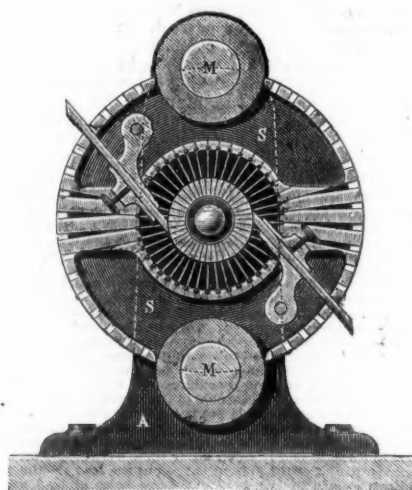


Fig. 2.

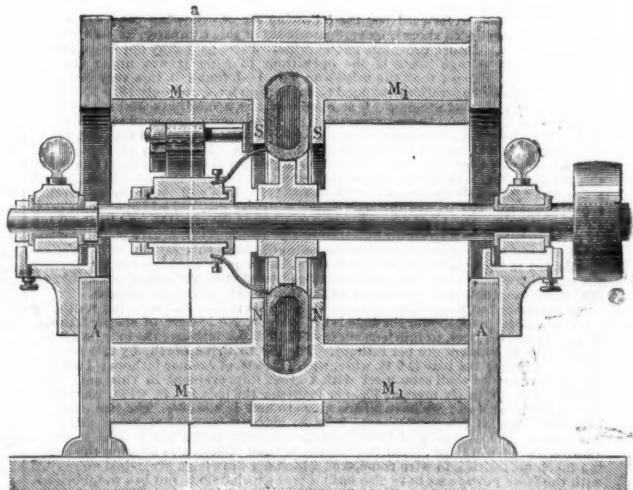


Fig. 3.

IMPROVEMENTS IN DYNAMO-ELECTRIC MACHINES.

As it is generally admitted that dynamo-electric machines are those most likely to facilitate the generation of electricity at a price to permit of its general application, improvements in this class of apparatus are naturally regarded with much interest. At present the invention of Mr. SCHUCKERT, of Nurnburg, is attracting considerable attention. Mr. Schuckert proposes to improve the Gramme machine by utilising to the utmost the whole of the wires forming the ring. For this purpose he makes the ring of a flat shape, permitting the armatures of the two electro-magnets to act simultaneously with regard to the induction current on both sides of the ring. In the above diagrams Fig. 1 shows the machine in perspective, whilst Fig. 2 and Fig. 3 are sections. The frame is formed of two iron stands, and the cores of the electro-magnets, the former serving as bearings for the shaft of the ring, the latter being in rigid connection with the standards, and wound with copper wire. In this shape the frame may be considered as two horse-shoe magnets, which are connected with their like-named poles; M M (Fig. 2) are the branches of one, and M¹ M¹ the branches of the other electro-magnet; the standards, A A, are the connecting pieces. The flat segment-shaped poles, S S, and N N (the armatures), surround more than two-thirds of the whole ring surface on each side.

By this arrangement the magnetization of the iron ring core is

very powerful, because it goes on from both sides at the same time; the upper half of the ring is getting north polarity (S S being the south poles of the adjoining electro-magnets), the lower half is becoming south pole. Hence both the longer sides of the flat ring wound with wire are influenced by the magnet poles; and, therefore, nearly the whole length of wire is utilised. It will easily be understood that the currents of both sides are in the same direction, and assist to maintain each other. The utilising of the currents of the upper and lower halves of the ring (which would neutralise each other) is effected, as in Pacinotti's and Gramme's machines, by taking them off near the neutral lines by means of metal brushes. The iron ring is made not of a solid piece but of a number of sheet

iron discs magnetically insulated from each other. The magnetic inertness of a temporary magnet increases proportionally with the mass of iron; and, therefore, a comparatively long time is required in reversing the poles to annihilate the existing magnetism in solid iron cores, so that with the rapid rotation of the ring, and consequently oft-repeated reversal of the poles, a weakening of the reverse magnetism in course of formation takes place.

In the single sheet-iron discs of but small volume this reversal of the poles goes on quicker, the maximum of magnetism is gained more completely, and thus the heating of the parts is prevented. For the same reason the power required for driving the ring is reduced to a minimum, because by the utilising of the ring from both sides no part of it is magnetised uselessly, and all the magnetism is converted into electricity. Mr. Schuckert connects the ring with the shaft by metal (instead of, as Gramme does, by wood) to prevent inconvenient induction action, which takes place when moving large wire masses through a magnetic field. In Schuckert's machine there is no danger of such inconvenient actions, because a very small part of the wire is brought into this field of induction, whilst the use of metal for this connection greatly increases the firmness of the machine. Another favourable feature of this flat ring shape is the facility which it offers for putting two or more rings on one shaft. Mr. Louis Simon, in Nottingham, is the agent for Mr. Schuckert's machine.

NOBEL'S EXPLOSIVES COMPANY

(LIMITED).

149, WEST GEORGE STREET, GLASGOW.

THE BRITISH DYNAMITE COMPANY

(LIMITED).

NOTICE IS HEREBY GIVEN, that in the Cause of the BRITISH DYNAMITE COMPANY (LIMITED) and NOBEL'S EXPLOSIVES COMPANY (LIMITED), versus FRANCIS KREBS and others, that the Right Honourable the House of Lords have, upon the appeal of the plaintiff companies, reversed the decision of the Court of Appeal below, and upheld the judgment of Mr. Justice Fry, given upon the 15th of June, 1877, whereby he awarded to the plaintiff companies an injunction to restrain the defendant, FRANCIS KREBS and others, during such time as certain Letters Patent of the 7th of May, 1867, should remain in force, from Manufacturing or Selling in this country any Lithofracture or any compound consisting of or containing Nitroglycerine absorbed into any porous unexplosive substance.

Notice is hereby further given, that any person infringing such Patent, or in any way Importing, Purchasing, Selling, Dealing in or Using any Lithofracture or any other compound consisting of or containing Nitroglycerine absorbed into any porous unexplosive substance will, immediately upon such fact coming to the knowledge of the plaintiff companies or their agents, be proceeded against, and such relief sought as the said companies may be advised.

J. AND R. GOLE, 4, Lime-street, London, E.C.,

Solicitors to the above-named companies.

Dated this 8th day of April, 1879.

Prize Medal—International Exhibition, 1862.



CHAPLIN'S PATENT PORTABLE STEAM ENGINES

FOR PUMPING AND WINDING.

SPECIALLY ADAPTED FOR PITS, QUARRIES, &c. SIMPLE AND STRONG; require NO FOUNDATION OR CHIMNEY STALK, and are EASILY ERECTED OR REMOVED.

Sizes, from 2 to 30 horse power.

Steam Cranes, 1½ to 30 tons, for railways, wharves, &c.; hoist, lower, and turn round in either direction by steam.

Stationary Engines, 1 to 30-horse power, with or without gearing.

Hoisting Engines, 2 to 30-horse power, with or without jib.

Contractors' Locomotives, 4 to 27-horse power.

Traction Engines, 6 to 27-horse power.

Ships' Engines, for winding, cooking, and distilling passed by H.M. Government for half water.

Steam Winches. Engines and Boilers for light screw and paddle steamers.

WIMSHURST, HOLICK, & CO., ENGINEERS.

CITY OFFICES: 2, WALBROOK, LONDON, E.C.

WORKS: REGENT'S CANAL DOCK, 603, COMMERCIAL ROAD EAST, LONDON, E. (near Stepney Station.)

THE NEW PATENT WATCHMAN'S DETECTOR CLOCK.

THIS IS BY FAR THE SIMPLEST AND BEST (and especially the strongest) DETECTOR EVER INVENTED. It can be used at once by the stupidest workman, and cannot be tampered with by the most ingenious.

Illustrated Circular free by post.

AGENTS WANTED—LIBERAL COMMISSION.

J. J. WAINWRIGHT AND CO.,

65, CAMBRIDGE STREET BUILDINGS, BIRMINGHAM.

MR. W. F. STANLEY, MATHEMATICAL INSTRUMENT MANUFACTURER TO H.M. GOVERNMENT, COUNCIL OF INDIA SCIENCE AND ART DEPARTMENT, ADMIRALTY, &c. MATHEMATICAL, DRAWING, and SURVEYING INSTRUMENTS of every description, of the highest quality and finish, at the most moderate prices.

Price-list post free.

ENGINE DIVIDER TO THE TRADE.

ADDRESS—GREAT TURNSTILE, HOLBORN, LONDON W.C.

MEXICO, NEW MEXICO, ARIZONA, UTAH, NEVADA AND CALIFORNIA.

F. M. F. CAZIN, MINING AND CIVIL ENGINEER, At BERNALILLO, NEW MEXICO, U.S. OF AMERICA,

Has 24 years' experience in Mining and Smelting, and 10 years' experience in American Business and Law, offers his services at moderate charges for Reporting on Mining and other Property in any of the above-named States or Territories; gives correct, safe, and responsible advice as to securing full titles and possession; and, as to best mode of utilizing the property, will assist in settling existing difficulties by compromise, and in disposing of developed mining property when held at real value; offers his assistance for securing undeveloped mining properties at home prices. As to care taken in reporting, referenda made to the Mining Journal Supplement, April 1, 1878, containing report on property of the Maxwell Land Grant and Railway Company; as to technical standing, to the prominent men of the trade—compare Mining Journal of Aug. 30 and Nov. 31, 1872, and New York Engineer and Mining Journal, Feb. 28, 1874.

£2000 SECURE ONE QUARTER INTEREST IN A PAYING COPPER MINING AND SMELTING BUSINESS.

The UNDERSIGNED has succeeded in securing the right of working, and an interest in, a COPPER MINE, which by actual development and test has proved capable of an almost unlimited production of ore, containing in the great average more than 10 per cent. copper. He has ready on the ground 1000 tons of ore, a good steam-engine and boiler, a good blower, 1000 bushel of charcoal, and all the material requisite for the construction of furnaces, and a good house to live in. Has a coal mine of his own at eight miles distance, and the right for timber on a large tract of land, and can turn out copper in less than a month, at a cost of \$150 per ton, including freight to New York. But he desires, for two good reasons, a PARTNER:—

1.—He is isolated, no man of culture being on less than 18 miles distance, and the nature of the business requires the presence of two partners.

2.—He needs the £2000 in part to pay therewith a balance on his interest, so as to begin clear of debt, and in part as working capital to stock the sale-store with.

Mr. R. MIDDLETON, of this Journal, will on personal application give some more particulars, and is also authorised to select among applicants.

No technical education is required, but a gentleman of commercial ability would be preferred. No time should be lost in making application, as the selection will be telegraphed within a few days.

F. M. F. CAZIN,

Mining and Civil Engineer.

Copperfield, near Bernalillo, New Mexico, U.S.A.

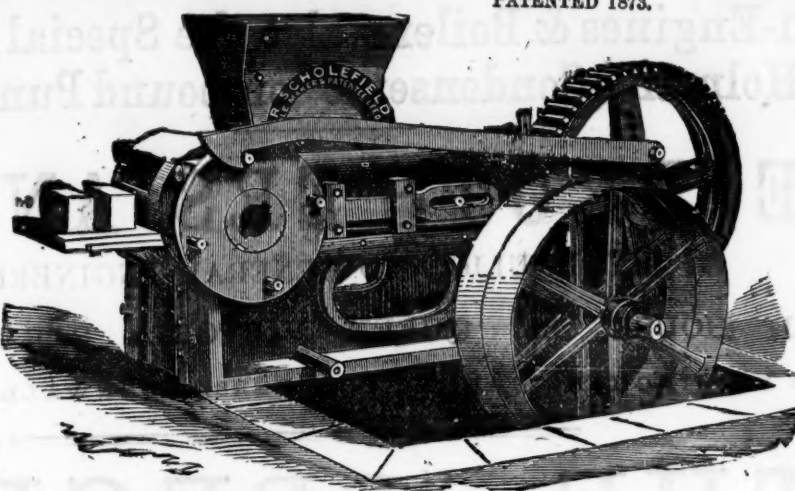
THE HISPANO-ANGLO-BELGE METALLURGICAL SOCIETY, CALLE MONTERA 23, MADRID.

Mine Proprietors: Exporters of Antimony, Galena, Tin, Copper, Calamine, Blende, Manganese, Iron, and Manganiferous Iron Ores, Phosphate of Lime, Sulphate of Barytes, Refined Sulphur, &c.: Importers of Colonial Produce, Metals, Chemicals, &c.

LONDON OFFICE:—16, 17, and 18, LANGBORN CHAMBERS, FENCHURCH STREET, E.C. AGENT: J. A. JONES.

R. SCHOLEFIELD'S LATEST PATENT BRICK-MAKING MACHINE.

PATENTED 1873.



R. S. begs to call the attention of all Colliery Owners in particular to his PATENT SEMI-DRY BRICK MACHINE, and the economical method of making bricks by his patent machinery from the refuse that is taken from the pits during the process of coal-getting, which, instead of storing at the pit's mouth (and making acres of valuable land useless) is at once made into bricks at a very small cost, by R. S.'s Patent Brick-making Machinery. If the material is got from the pit hill, the following is about the cost of

production, and the hands required to make 10,000 pressed bricks per day:—

2 men digging, each 4s. per day	£0 8 0
1 man grinding, 4s. 6d. per day	0 4 6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 1s. per day	0 2 0
1 boy greasing, 1s. 6d. per day	0 1 6
1 engine-man, 6s. per day	0 5 0
1 man wheeling bricks from machine to kiln, 4s. per day	0 4 0

Total cost of making 10,000 pressed bricks ... £1 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging. As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

THE MACHINES CAN BE SEEN IN OPERATION AT THE WORKS OF THE SOLE MAKER AND PATENTEE DAILY.

SCHOLEFIELD'S ENGINEERING & PATENT BRICK MACHINE WORKS KIRKSTAL ROAD, LEEDS.

Electric-Bell Signals for Collieries, Factories, Warehouses, &c.,

WITH OR WITHOUT GALVANIC BATTERIES.

NEW SYSTEM—CAN BE RUNG AT ANY PART OF THE ROAD. Cheap, safe, and reliable. Efficiency guaranteed. LINES OF TELEGRAPH erected and maintained. LIGHTNING CONDUCTORS, &c.

For estimates and particulars apply to—

SYDNEY F. WALKER,

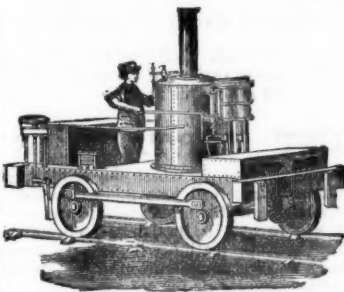
LATE G. E. SMITH,

TELEGRAPH ENGINEER.

COMMERCIAL BUILDINGS LONG ROW NOTTINGHAM.

CHAPLIN'S PATENT CONTRACTORS' LOCOMOTIVES

9 to 27-horse power. Can be made to suit any gauge from about 2 ft. upwards, and are specially adapted for steep inclines and quick curves. They are strong and simple in construction, and geared to draw very heavy weights in proportion to their power. A large number are successfully working at QUARRIES, GASWORKS, RAILWAY SIDINGS, &c.



STEAM CRANES, portable and fixed, for Wharf or Rail.

STEAM and HAND DERRICK and OVERHEAD TRAVELLING CRANES.

HOISTING AND PUMPING ENGINES.

Improved Steam Excavator or "Navy."

STEAM ROAD ROLLERS,

And other of our CHAPLIN'S VERTICAL ENGINES and BOILERS, always in stock or in progress.

PATENTERS AND SOLE MANUFACTURERS,

ALEX. CHAPLIN & CO., CRANSTON HILL ENGINE WORKS, GLASGOW. London House: McKendrick, Ball, & Co., 63, Queen Victoria-st., E.C.

MANCHESTER WIRE WORKS.

NEAR VICTORIA STATION, MANCHESTER.

(ESTABLISHED 1790).

JOHN STANLIAR AND CO.,

Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for

LEAD AND COPPER MINES.

Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper

EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES

Shipping Orders Executed with the Greatest Dispatch.

THE SANDYCROFT FOUNDRY AND ENGINE WORKS COMPANY (LIMITED),

NEAR CHESTER

(Late the MOLD FOUNDRY COMPANY. Established 1833.)

MAKERS OF

MINING MACHINERY,

CORNISH PUMPING, WINDING, AND EVERY OTHER DESCRIPTION

OF ENGINE,

PITWORK, BOILERS, FORGINGS,

WATER-WHEELS, ORE CRUSHING, STAMPING, AND DRESSING

MACHINERY,

GOLD AND SILVER AMALGAMATING MACHINERY,

MINING TOOLS,

ROCK DRILLS, AIR COMPRESSING ENGINES, and all the

necessary accessories for MACHINE BORING.

SPECIAL ATTENTION GIVEN TO MACHINERY FOR FOREIGN MINES.

SECOND-HAND MINING MACHINERY FOR SALE.

LONDON AGENTS:—MESSRS. JOHN TAYLOR AND SONS,

6, QUEEN STREET PLACE, SOUTHWARK BRIDGE, E.C.

CALIFORNIAN AND EUROPEAN AGENCY,

205, LEIDESDORFF ST., SAN FRANCISCO, CALIFORNIA.

THIS AGENCY is prepared to make Investments in approved REAL ESTATE, MINING PROPERTIES, MINING STOCKS, &c., and to INVEST MONEY in FIRST-CLASS SECURITIES in CALIFORNIA, and the neighbouring States.

Also to AFFORD INFORMATION and ADVICE to parties abroad who may contemplate or may have already invested in Enterprises on the Pacific Coast, and to take charge of Property, and to look after the interests of absentees.

EDWARD J. JACKSON, P.O. Box 735, San Francisco, Cal.

Wm. Lane Booker, Esq., H. B. Majesty's Consul, S. F.; the Honorable Leland Stanford, Ex-Governor of California and President of the Central Pacific Railroad, S. F.; the Right Rev. Wm. Ingraham Rip, D.D., LL.D., Bishop of California; the Rev. William Vaux, Senior Chaplain U.S.A., Santa Cruz, Cal.; the Anglo-Californian Bank, San Francisco, California; the Anglo-Californian Bank, No. 3, Angel court, Throgmorton-street, London, E.C.

MR. WILLIAM BREDEMAYER, MINING, CONSULTING AND CIVIL ENGINEER, U.S. MINERAL SURVEYOR FOR UTAH AND IDAHO. NOTARY PUBLIC.

Geological examinations; reports on mining properties; surveys mines, railroads, and canals, and superintends the workings of the same. Prepares estimates and plans for opening and working mines. Expert on mining questions before the Courts.

Address, "P. O. Box 1157," Salt Lake City, Utah.



PARIS EXHIBITION, 1878.

GOLD AND SILVER MEDALS AWARDED for
Steam-Engines & Boilers, also the Special Steam Pump,
with Holman's Condenser & Compound Pumping Engine.



TANGYE BROTHERS AND HOLMAN,

HYDRAULIC AND GENERAL ENGINEERS

CORNWALL HOUSE, 35, QUEEN VICTORIA STREET, LONDON, E.C.,

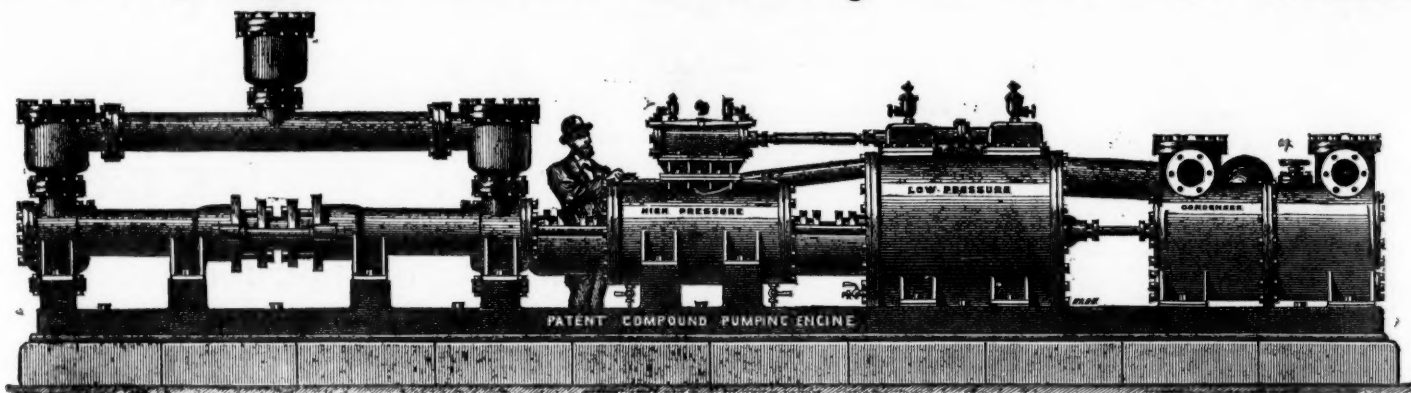
AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS SOHO.

THE "SPECIAL"

DIRECT-ACTING

COMPOUND PUMPING ENGINE,

For use in Mines, Water Works, Sewage Works,
And all purposes where Economy of Fuel is essential.



THE "SPECIAL" DIRECT-ACTING COMPOUND PUMPING ENGINE, WITH AIR-PUMP CONDENSER.

After several years of successful application for all purposes to which steam-driven pumps can be applied, THE "SPECIAL" STEAM PUMP STILL MAINTAINS THE FIRST POSITION IN THE MARKET, notwithstanding that it alone—of all direct-acting pumps—has been subjected to the great variety of severe tests that must be encountered in such a period of time. Some valuable improvements have been suggested in the course of a long experience, and their adoption has rendered the apparatus at once

THE SIMPLEST AND MOST CERTAIN IN ACTION.

The illustration shows an extension of the principle of this Pump to a Compound Steam Pumping Engine, by which the economical advantages resulting from the expansion and condensation of steam are very simply and effectively obtained. The steam after leaving the high-pressure cylinder is received into and expanded in the low-pressure cylinder, and is thus used twice over before being exhausted into the condenser or atmosphere. The Engine combines simplicity, certainty of action, great compactness, fewness of parts, and consequent reduction in wear and tear.

Several thousands of the "Special" Steam Pumping Engines, with high-pressure cylinders only, are in use in British and Foreign Mines, Water Works, &c.,—and for confined situations, or where Engines of a comparatively small size only are necessary, they will still meet all requirements—but their application will be very largely increased, since it has been found practicable to embrace the important features of expanding and condensing the steam, so that increased power may be obtained, and the consumption of fuel greatly economised.

THE "SPECIAL" DIRECT-ACTING COMPOUND STEAM PUMPING ENGINE is the most simple appliance for deep mine draining and general purposes of pumping ever practically developed, and the first cost is very moderate compared with the method of raising water from great depths by a series of 40 to 50 fathom lifts. No costly engine-houses or massive foundations, no repetition of plunger lifts, ponderous connecting rods, or complication of pit-work are required, while they allow a clear shaft for hauling purposes.

SIZES AND PARTICULARS.

Diameter of High-pressure Cylinder.....In.	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14
Ditto of Low-pressure Cylinder	14	14	14	18	18	18	18	21	21	21	21	24	24	24	24
Ditto of Water Cylinder	4	5	6	5	6	7	8	6	7	8	10	7	8	10	12
Length of stroke	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Gallons per hour approximate	3900	6100	8800	6100	8800	12,000	15,650	8,800	12,000	15,650	24,450	12,000	15,650	24,450	35,225
Diameter Suction and Delivery	3	3½	4	3½	4	5	6	4	5	6	8	5	6	8	9
Diameter High-pressure Steam Inlet.....In.	1½	1½	1½	1½	1½	1½	1½	2½	2½	2½	2½	2½	2½	2½	2½
Diameter Low-pressure Steam Exhaust.....In.	1½	1½	1½	1½	1½	1½	1½	2½	2½	2½	2½	2½	2½	2½	2½
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder.....	360	330	160	360	250	184	140	360	264	202	130	360	275	175	122
Ditto ditto ditto—with Holman's Condenser.....	480	307	213	480	333	245	187	480	352	269	173	480	367	234	162
Ditto ditto ditto—with Air-pump Condenser.....	600	384	267	600	417	306	335	600	440	337	216	600	459	203	203

CONTINUED.

Diameter of High-pressure Cylinder	16	16	16	16	18	18	18	18	21	21	21	24	24	24	30	30
Ditto of Low-pressure Cylinder	28	28	28	28	32	32	32	32	36	36	36	42	42	42	52	52
Ditto of Water Cylinder	8	10	12	14	8	10	12	14	10	12	14	10	12	14	12	14
Length of stroke	36	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate	15,650	24,450	35,225	47,950	13,650	24,450	35,225	47,950	24,450	35,225	47,950	24,450	35,225	47,950	35,225	47,950
Diameter Suction and Delivery	6	8	9	10	6	8	9	10	8	9	10	8	9	10	9	10
Diameter High-pressure Steam Inlet.....In.	2½	2½	2½	2½	3	3	3	3	3½	3½	3½	4	4	4	5½	6½
Diameter Low-pressure Steam Exhaust.....In.	3	2	3	3	3½	3½	3½	3½	4	4	4	5	5	5	6½	6½
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder.....	360	230	160	118	456	292	202	149	397	276	202	518	360	264	562	
Ditto ditto ditto—with Holman's Condenser.....	480	307	213	154	603	389	269	198	528	363	269	691	480	352	750	
Ditto ditto ditto—with Air-pump Condenser.....	600	384	267	191	750	486	337	248	660	450	337	864	600	440	937	

PRICES GIVEN ON RECEIPT OF REQUIREMENTS.

Any number of these Engines can be placed side by side, to work in conjunction or separately as desired, thereby multiplying the work of one Pump to any extent.

NORTH OF ENGLAND HOUSE
SOUTH WALES HOUSE...

TANGYE BROTHERS, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.
TANGYE BROTHERS AND HOLMAN, Seaside Place, NEWPORT, Mon.; and Exchange Buildings, SWANSEA

Awarded Gold Medal, Paris Exhibition, 1878.

HADFIELD'S STEEL FOUNDRY COMPANY.

FIRST PRIZE MEDALS AT LEEDS, MANCHESTER, AND
WREXHAM EXHIBITIONS, 1875 AND 1876.

ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

CRUCIBLE STEEL CASTINGS,

FOR

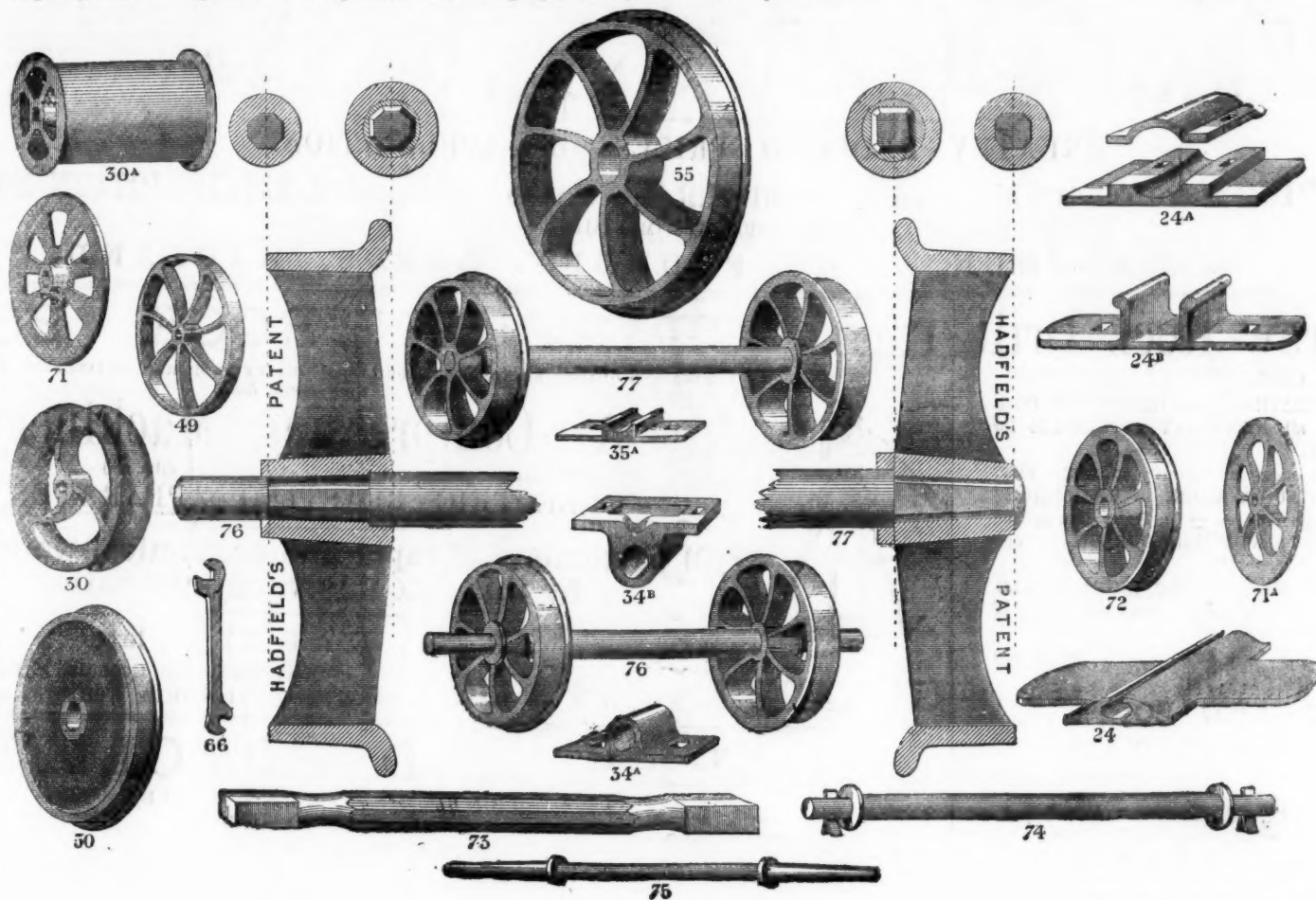
Engineering & Mining Purposes,

AND ARE THE SOLE MAKERS OF

HADFIELD'S CRUCIBLE STEEL WHEELS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c., &c. We have made, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.

N.B.—Prices per Set of Wheels and Axles fitted complete, forwarded on receipt of diameter of wheel on tread, depth of tread, real gauge, and thickness of axles and rolling load.



[This Sheet of Drawings is Copyright.]

HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very heavily fitted on, and run exceedingly true.

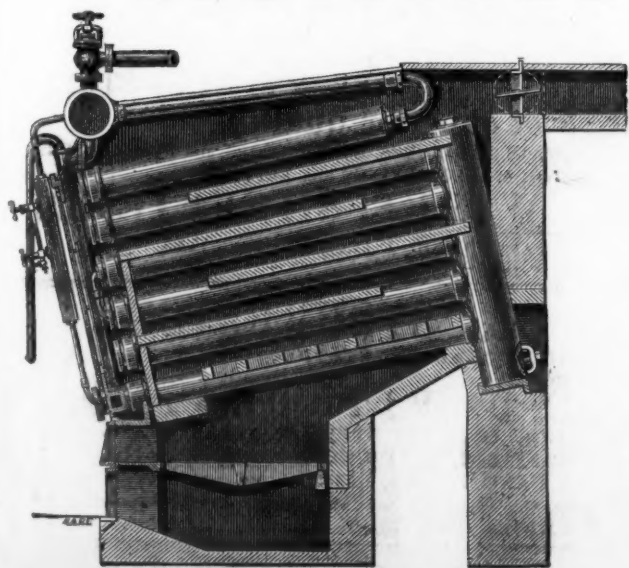
We construct the Arms of wheels upon the curved principle (as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material.

CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannot be broken while working, even with rough usage, and will wear at least twelve times as long as Cast-Iron, thus saving animal and steam power, and reducing wear and tear immensely.

We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES, the adoption of which will prove highly advantageous.

MACHINE MOULDED STEEL GEAR WHEELS OF EVERY DESCRIPTION.

BARROW SECTIONAL BOILER.



THE BARROW SHIPBUILDING COMPANY beg to call the particular attention of Steam Users to the great advantages to be obtained by adopting their Improved-Sectional Boilers. After the most careful experiments extending over some years, and having worked these Boilers in their own workshops under the most varying conditions, and subject to the most crucial tests, they have every confidence in recommending them to the public.

The Boilers are constructed of the very best material, combined with the most careful workmanship, every Boiler being tested to 300 lbs. per square inch, and made absolutely tight and perfect before leaving the company's works.

Each Boiler, in addition, is sold with the certificate of the Inspecting Engineer of one of the first Boiler Insurance Companies in the country.

For particulars, apply to the—

BARROW SHIPBUILDING CO.
(LIMITED),
BARROW-IN-FURNESS.

£5. £10. £20. £50. £100.
ALEX. FROTHINGHAM AND CO.,
BANKERS AND STOCK BROKERS,

No. 12, WALL STREET, NEW YORK, U.S.A.,

Make INVESTMENTS in STOCKS on the NEW YORK STOCK EXCHANGE in amounts from £5 upwards, which frequently pay from five to twenty times the amount invested every thirty days.

Explanatory Circular and Reports sent free by mail.

Now ready, price 3s., by post 3s. 3d., Sixth Edition; Twentieth Thousand Copy much improved, and enlarged to nearly 300 pages.

HOPKINSON'S CONVERSATIONS ON MINES, between Father and Son. The additions to the work are near 80 pages of useful information, principally questions and answers, with a view to assist applicants intending to pass an examination as mine managers, together with tables, rules of measurement, and other information on the moving and propelling power of ventilation, a subject which has caused so much controversy.

The following few testimonials, out of hundreds in Mr. Hopkinson's possession, speak to the value of the work:—
"The book cannot fail to be well received by all connected with collieries."—*Miners' Journal*.

"Its contents are really valuable to the miners of this country."—*Miners' Conference*.
"Such a work, well understood by miners, would do more to prevent colliery accidents than an army of inspectors."—*Colliery Guardian*.

London: MINING JOURNAL Office, 26, Fleet-street, E.C., and to be had of all booksellers.

THE MINING RECORD. Only \$3.00 a year. 61, BROADWAY, NEW YORK. Is the ONLY PAPER in the United States that gives FULL LATEST ACCOUNTS from all the GREAT GOLD, SILVER, and other MINES of AMERICA. ORDERS EXECUTED FOR MINING STOCKS. Information free.

ALEX. ROBT. CHISHOLM, Proprietor.

London Office, —H. J. CHAWNER, Manager, 53, Great Tower-street, E.C.

THE NEWCASTLE DAILY CHRONICLE (EST. 1784.) THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER Offices, Westgate-road, Newcastle-upon-Tyne; 50, Howard street, North Shields; 105, High street, Sunderland.

At the PARIS EXHIBITION the Jurors have Awarded

THE GOLD MEDAL, THE SILVER MEDAL, AND HONOURABLE MENTION FOR MY LATEST PATENTED STONE BREAKERS AND ORE CRUSHERS.

Stones broken equal, and Ores better, than by hand, at one-tenth the cost.

H. R. MARSDEN,

ORIGINAL PATENTEE AND SOLE MAKER OF BLAKE'S

Improved Patent Stone Breakers & Ore Crushers.

New Patent Reversible Jaws,
in Sections, with Patent
Faced Backs.

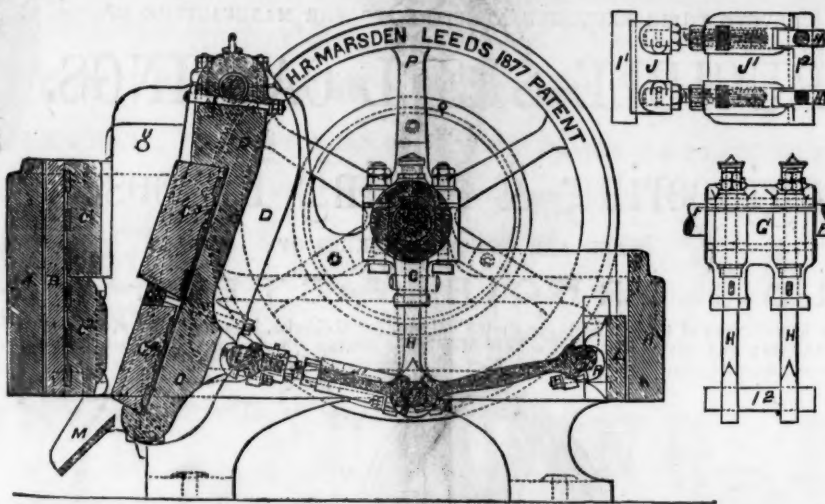
NEW PATENT ADJUSTABLE
TOGGLES.
OVER 2500 IN USE.

New Patent Draw-back
Motion.

NEW PATENT STEEL TOGGLE BEARINGS.

70

PRIZE MEDALS.



READ THIS—

Wharfedale Lime Works, Maryport, Whitehaven,
November 7, 1878.
H. R. MARSDEN, Esq., Soho Foundry, Meadow-lane, Leeds.
DEAR SIR,—The machine I have in use is one of the large
size, 24 in. by 13 in. The quantity we are breaking daily with
this one machine is 350 tons, the jaw being set to break to a
size of 2½ in. We have, however, frequently broken over
300 tons per day of ten hours, and on several occasions over
350 tons during the same period. The stone we break is the
blue mountain limestone, and is used as a flux in the various
ironworks in this district. We have now had this machine in
daily use for over two years without repairs of any kind, and
have never had occasion to complain of any inconvenience in
using the machine. I hope the one you are now making for
me may do its work equally well. The cost—including EN-
GINE-POWER, COALS, ENGINEMAN, FEEDING, and all EXPENSES
OF EVERY KIND—is just 3d. per ton. Should any of your
friends feel desirous of seeing one of your machines at work,
I shall have much pleasure in showing the one alluded to.
I am, dear Sir, yours very truly,
WILLIAM MILLER.

AND THIS—

Wharfedale Lime Works, Aspatria, Cumberland,
July 11th, 1878.
H. R. MARSDEN, Esq., Soho Foundry, Leeds.
DEAR SIR,—We are in receipt of your letter of 4th inst. I
may just state that the stone breaker above named has been
under my personal superintendence since its erection, and I
have no hesitation in saying that it is as good now as it was
five years ago.
I am, dear Sir, yours faithfully,
FRANCIS GOULD.

GREATLY REDUCED PRICES ON APPLICATION.

ALL BEARINGS are renewable, and made of H.R.M.'s Patent Compound ANTIFRICTION METAL.

CATALOGUES, TESTIMONIALS, &c.

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.

The Barrow Rock Drill

COMPANY

SUPPLY their CELEBRATED ROCK DRILLS, AIR COM-
PRESSORS, &c., and all NECESSARY APPLIANCES for
working the said Drills.

Their DRILLS have most satisfactorily stood the TEST
of LONG and CONTINUOUS WORK in the HARDEST
KNOWN ROCK in numerous mines in Great Britain and
other countries, clearly proving their DURABILITY and
POWER.

The DRILLS are exceedingly STRONG, LIGHT, SIMPLE,
and adapted for ends, stopes, quarries, and the sinking of
shafts. They can be worked by any miner.

For PRICES, Particulars and Reports of Successful and
Economical Working, apply to—

LOAM AND SON,
LISKEARD, CORNWALL.

BICKFORD'S PATENT
FOR CONVEYING
CHARGE INSAFETY FUSE
FIRE TO THE
ELASTIC ROCKS &c.

Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1851; at
the "INTERNATIONAL EXHIBITION" of 1862 and 1874, in London; at the
"IMPERIAL EXHIBITION," held in Paris, in 1865; at the "INTERNA-
TIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXPOSI-
TION," in Paris, 1867; at the "GREAT INDUSTRIAL EXHIBITION," at Al-
tona, in 1869; TWO MEDALS at the "UNIVERSAL EXHIBITION," Vienna,
in 1873; and at the "EXPOSITION NACIONAL ARGENTINA," Cordoba,
South America, 1872.



BICKFORD, SMITH AND CO.,
of TUCKINGMILL, CORNWALL; ADELPHI
BANK CHAMBERS, SOUTH JOHN-STREET, LIVER-
POOL; and 88, GRACECHURCH-STREET, LONDON,
E.C., MANUFACTURERS AND ORIGINAL
PATENTERS OF SAFETY-FUSE, having been in-
formed that the name of their firm has been attached to
fuse not of their manufacture, beg to call the attention of
the trade and public to the following announcement:—

EVERY COIL OF FUSE MANUFACTURED by them has TWO SEPARATE
THREADS PASSING THROUGH the COLUMN of GUNPOWDER, and BICK-
FORD, SMITH, AND CO. CLAIM SUCH TWO SEPARATE THREADS as
THEIR TRADE MARK.

Second Edition. Just published, price 8s. 6d.

A NEW GUIDE TO THE IRON TRADE;
OR, MILL MANAGERS' AND STOCK-TAKERS' ASSISTANT;
Containing a Series of New and Comprehensive Tables, practically arranged to
show at one view the Weight of Iron required to produce Boiler-plates, Sheet-iron,
and Flat, Square, and Round Bars, as well as Hoop or Strip Iron of any dimen-
sions. To which is added a variety of Tables for the convenience of Merchants,
including a Russian Table.
By JAMES ROSE.
Bateman's Hill Ironworks, Bradley, near Bilston.

OPINIONS OF THE PRESS.

"The Tables are plainly laid down, and the information desired can be instantly
newly obtained."—*Mining Journal*.
"900 copies have been ordered in Wigan alone, and this is but a tithe of those to
whom the book should commend itself."—*Wigan Examiner*.
"The work is replete on the subject of underground management."—*M. BANK*
Colliery Proprietor.

To be had on application at the MINING JOURNAL Office, 25, Fleet-street, London

THE GREAT ADVERTISING MEDIUM FOR WALES.

THE SOUTH WALES EVENING TELEGRAM
(DAILY), and
SOUTH WALES GAZETTE
(WEEKLY), established 1857.

The largest and most widely circulated papers in Monmouthshire and South Wales
CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the
second edition at Five P.M. On Friday, the "Telegram" is combined with the
"South Wales Weekly Gazette," and advertisements ordered for not less than six
consecutive insertions will be inserted at a uniform charge in both papers.
P. O. O. and cheques payable to Henry Russell Evans, 14, Commercial-street,
Newport, Monmouthshire.

THE IRON AND COAL TRADES' REVIEW.
The IRON AND COAL TRADES' REVIEW is extensive, circulated amongst the
Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron
and coal districts. It is, therefore, one of the leading organs for advertising every
description of Iron Manufactures, Machinery, New Inventions, and all matters
relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
The Review is published by W. T. Fringle, Westminster Chambers, S.W.
Remittances payable to W. T. Fringle.

THE "CHAMPION" ROCK BORER

MINE AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIARUBBER HOSE, TESTED
IRON PIPES, &c.

Air-Compressing Machinery,

Simple, strong, and giving most excellent results, and
ELECTRIC BLASTING APPARATUS.

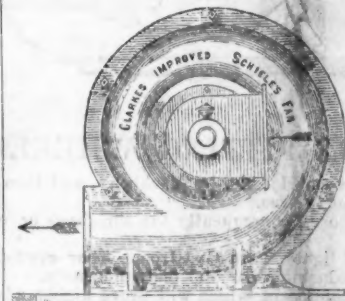
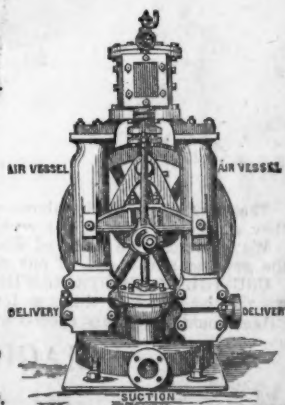
Full particulars of rapid and economical work effected
by this machinery, on application.

R. H. HARRIS, late

ULLATHORNE AND CO., 63, QUEEN VICTORIA STREET, LONDON, E.C.

CLARKE AND SUTCLIFFE.

CLARKE'S SILENT FANS,
BLAST AND EXHAUST.
MINE VENTILATORS.
HAND-POWER FANS FOR SINKING
AND DRIFTING.
PORTABLE FORGES.
SHIP VENTILATORS.
SLATE MACHINERY.
SMITHS' HEARTHES.
TURBINE WATER-WHEELS.
DOUBLE-ACTING STEAM PUMP.

"THE EXCELSIOR EXHAUST
FAN"

UNION IRONWORKS,
Rochdale Road, Manchester,
LATE
THE UNION ENGINEERING COMPANY, LIMITED.

GOLD MEDAL AWARDED, PARIS EXHIBITION, 1878.

THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL
MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS & SPRING WORKS, SHEFFIELD.

LONDON OFFICES.—90 CANNON STREET, E.C. PARIS DEPOT.—12, RUE DES ARCHIVES.
NEW YORK STORE.—102, JOHN STREET.

J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES,
FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,
RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions,
STOURBRIDGE FIRE BRICKS AND CLAY.